Note remarks

Test sheet : PER vorl. Edition : 24.01.91

Replaces

Test oil : ISO-4113

Injection pump

Pump designation : PES4MW100/120RV18277

Governor

: RQV300...1300MWV Governor design.

19736K

: B 420 080 120 Governer no.

Customer-spec. information Customer · PERKINS

TEST BENCH REQUIREMENTS

Test oil

: 40...45 inlet temp. °C

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 112 assembly

Openina .

: 172...175 pressure, bar

Test Lines : 1 689 750 008

Outside diameter x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

: 3.30...3.40 Prestroke mm : (3.25...3.45)

Rack travel in mm: 10.50

Firing order : 1-3-4-2

Phasing : 0-90-180-270

Tolerance $+ - ^{\circ} : 0.50 (0.75)$

Time to cyl. no. : 1

BASIC SETTING

1st speed rom : 1300

Rack travel in mm : 12.20...12.30

Del.quantity cm3/: 11.4...11.6

100 s: (11.2...11.8)

cm3 : 0.3Spread

100 s: (0.6)

rpm : 300 2nd speed

Rack travel in mm: 6.4...6.6 Del.quantity cm3/: 1.0...1.4

100 s: (0.6...1.8)

cm3 : 0.3 100 s: (0.5) Spread

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1420 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rom : 1300Speed Aneroid pressure h: MAX.

Del.quantity : 714.0...118.0)

: 3.50 cm3 Spread 1000 : (6.00)

RATED SPEED

1st version Control Lever

position degrees: ?

Testing:

1st rack travel in: 11.20 Speed rpm : 1340...1350

2nd rack travel in: 4.00

rpm : 1490...1520 Speed

4th rack travel in: 1700

rpm : 0.30...1.70 Speed

LOW IDLE 1 Control lever

position degrees: ?

Testing:

Speed rpm : 100 Minimum rack trave: ?

rpm : 300 Speed Rack travel in mm : 6.40...6.60 Aneroid/Altitude Compensator Test 1st version Setting : 500 Speed mom. hPa : MAX. Pressure : 12.20...12.30 Rack travel mm Measurement 1/min: 500 Speed 1st pressure hPa : -Rack travel in m: 9.00...9.20 2nd pressure hPa : 150 Rack travel in m: BEGINN START CUT-OUT Speed 1/min: 230 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: MAX. Speed rpm : 900 Del.quantity cm3/: 107.5...110.5 1000 s: (-) Spread cm3 : 5.001000 s: (-) Aneroid pressure h: MAX. Speed rpm: 550 Del.quantity cm3/: 78.5...81.5 1000 s: (-) cm3 : 5.00Spread Aneroid pressure h: MAX. rpm : 450 Speed Del.quantity cm3/: 70.0...73.0 1000 s: (-) Spread cm3 : 5.00Aneroid pressure h: -: 550 Speed rpm Del.quantity cm3/: 60.0...62.0 1000 s: (-) Spread cm3 : 3.50 1000 s: (-)

BREAKAWAY

1st version 1mm rack travel less than full load rack tr: 11.20

rom : 1340...1350 Speed

STARTING FUEL DELIVERY

: 100 Speed rom

LOW IDLE

Speed rpm : 300 Rack travel in mm : 6.40...6.60 Del.guantity cm3/: 10.0...14.0

1000 s: (-)

cm3 : 3.50Spread 1000 s: (-)

Remarks:

: c.d.c. 3913733

A02

Note remarks

Test sheet : KHD vorl. Edition : 25.01.91

Replaces : -

Test oil : ISO-4113

Injection pump

Pump designation : PES6A85D410/3RS2761

EP type number : 0 410 886 895

Governor

Governor design. : RQV300...1250ABV

Governor design. : 20454

Customer—spec. information Customer : KHD

Engine : BF6L913

1st version kW : 96.0 Rated speed : 2500

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Opening.

pressure, bar : 172...175

Test Lines : 1 680 750 014

Outside diameter x Wall thickness

x Length mm : 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.50...2.60

: (2.45...2.65)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance $+ - \circ : 0.50 (0.75)$

BASIC SETTING

1st speed rpm: 1250

Rack travel in mm : 10.70...10.80

Del.quantity cm3/: 7.0...7.1

100 s: (6.8...7.3)

Spread cm3:0.3

100 s: (0.5)

2nd speed rpm : 300.0 Rack travel in mm : 7.7...7.9 Del.quantity cm3/: 0.8...1.4

100 s: (0.6...1.6)

Spread cm3 : 0.2 100 s: (0.4)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 1.84...2.34 2nd speed rpm : 360

travel mm : 2.26...2.76

3rd speed rpm: 800

travel mm : 4.83...5.33 4th speed rpm : 1300

travel mm : 8.70...9.20

5th speed rpm : 1530

travel mm : 11.50...12.00

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm: 1235

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm: 1250

Del.quantity : 70.5...71.5 1000 : (68.5...73.5)

Spread cm3 : 3.00

1000 : (5.00)

RATED SPEED

1st version

Control lever
position degrees: 51...59

Testing:
1st rack travel in: 9.70
Speed rpm : 1290...1300

2nd rack travel in: 4.00 Speed rpm : 1362...1392

LOW IDLE 1 Control lever position degrees: 19...27

Testing:
Speed rpm : 100
Minimum rack trave: 8.20
Speed rpm : 300
Rack travel in mm : 6.60...6.80

CONSTANT REGULATION
Speed rpm : 345...465

TORQUE CONTROL
Dimension a mm : 0.55
Torque control curve - 1st version
1st speed rpm : 1250
Rack travel in m: 10.70...10.80
2nd speed rpm : 790
Rack travel in m: 11.20...11.30
3rd speed rpm : 910
Rack travel in m: 11.00...11.20
4th speed rpm : 1105

Rack travel in m: 10.80...11.00

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version Speed rpm : 775 Del.quantity cm3/ : 67.0...69.0 1000 s: (64.5...71.5)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 9.70 Speed rpm : 1290...1300

STARTING FUEL DELIVERY

Speed rpm: 100

Del.quantity cm3/: 110.0...120.0 1000 s: (107.0...123.0)

Rack travel in mm : 17.00...17.40

Remarks:

Note remarks

: MB 8,7 L 1 : 25.01.91 Test sheet Edition

Replaces

Test oil : ISO-4113

: 0 400 646 278 Combination no.

Injection pump

Pump designation : PE6A90D410RS2124 EP type number : 0 410 696 141

Governor

Governor design. : R0375/1275AB812-1L

: 0 420 200 115 Governer no.

Customer-spec. information

Customer : MERCEDES-BENZ

: OM 360 Engine

1st version kW : 141.0 : 2550 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening |

pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter

x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.15...2.25 Prestroke mm : (2.10...2.30)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

: 0.50 (0.75) Tolerance + - °

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1250

Rack travel in mm : 10.20...10.30

Del.quantity cm3/: 8.6...8.7

100 s: (8.4...8.9)

Spread cm3 : 0.3

100 s: (0.4)

rpm : 375.02nd speed Rack travel in mm: 6.4...6.6 Del.quantity cm3/: 1.2...1.8

100 s: (1.0...2.0)

cm3 : 0.2Spread

100 s: (0.4)

GUIDE SLEEVE POSITION Control-lever position

> Degree: -1 rpm : 1275

Speed Rack travel in mm: 15.60...16.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1250 Speed

: 86.0...87.0 Del.quantity 1000 : (84.0...89.0)

: 3.00 Spread cm3

1000 : (4.50)

RATED SPEED

1st version

Setting point:

Speed : 1275 Rack travel in mm: 16.0

Testing:

1st rack travel in: 9.20

rpm : 1315...1325 Speed

2nd rack travel in: 4.00

rpm : 1385...1415 Speed

LOW IDLE 1

Setting point w/out bumper spring

: 375 Speed rpm Rack travel in mm: 6.5

Testing:

Speed rpm : 275 Minimum rack trave: 8.00 Speed rpm : 375

Rack travel in mm: 6.40...6.60
Rack travel in mm: 2.00
Speed rpm: 445...505 rpm : 550 Speed Maximum rack trave: 1.00

FUEL DELIVERY CHARACTERISTICS

1st version

rpm : 800 Speed

Del.quantity cm3/: 80.0...83.0 1000 s: (78.0...85.0)

1000 s: (5.)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 9.20

rpm : 1315...1325 Speed

Remarks:

Note remarks

: KHD 12,7 p7 : 01.02.91 Test sheet Edition Replaces : 11.5.89

Test oil : ISO-4113

Combination no. : 0 400 648 112

Injection pump

Pump designation : PE8A95D410LS2608 : 0 410 698 988 EP type number

Governor

Governor design. : RQV300...1250AB990DL

: 0 420 214 228 Governer no.

Customer-spec. information Customer : KHD

Engine : F8L413F

1st version kW : 188.0 Rated speed : 2500

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.50 `

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

: 1 680 750 014 Test Lines

Outside diameter x Wall thickness

x Length mm : 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.00...2.10 Prestroke mm : (1.95...2.15)

Rack travel in mm : 9.00...12.00

: 1- 8- 7- 2- 6- 5-4- 3 Firing order

: 0-45-90-135-180-225-Phasing

270-315

: 0.50 (0.75) Tolerance + - °

Time to cyl. no. : 1

BASIC SETTING

rpm: 1250 1st speed

Rack travel in mm : 9.90...10.00

Del.quantity cm3/: 9.1...9.3

100 s: (8.9...9.5)

cm3 : 0.3Spread

100 s: (0.6)

rpm : 300.0 2nd speed Rack travel in mm: 6.2...6.3 Del.quantity cm3/: 1.1...1.7

100 s: (0.8...1.9) cm3 : 0.3

Spread

100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -1 rpm : 1290

Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

rpm : 1250 : 91.5...93.5 Del.quantity 1000 : (89.5...95.5)

: 3.00 Spread cm3

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 57...65

Testing:

1st rack travel in: 8.90

rpm : 1290...1300 Speed

2nd rack travel in: 4.00

rpm : 1360...1390 Speed

4th rack travel in: 1500

rpm : 0.00...1.00Speed

LOW IDLE 1 Control lever position degrees: 8...16 Testing: : 100 Speed rom Minimum rack trave: 7.70 rpm : 300 Speed Rack travel in mm : 6.20...6.30 : 950 Speed rom Maximum rack trave: 1.00 CONSTANT REGULATION rpm : 320...440 Speed TORQUE CONTROL Dimension a mm : 0.50 Torque control curve - 1st version rpm : 1250 1st speed Rack travel in m: 9.90...10.00 rpm : 1075 2nd speed Rack travel in m: 9.90...10.20 rpm : 925 3rd speed Rack travel in m: 10.20...10.40 4th speed rpm : 500 Rack travel in m: 10.40...10.50 START CUT-OUT 1/min: 220 (240) Speed FUEL DELIVERY CHARACTERISTICS 1st version : 1000 Speed rpm Del.quantity cm3/: 91.0...94.0 1000 s: (89.0...96.0) rpm : 700 Speed Del.quantity cm3/: 91.5...94.5 1000 s: (89.5...96.5) RACK STOP ADJUSTMENT rpm : 600 Speed BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 8.90 rpm : 1290...1300 Speed STARTING FUEL DELIVERY

rom : 100

Speed

80A

Del.quantity cm3/: 120.0...130.0 1000 s: (117.0...133.0) Rack travel in mm: 13.90...14.90 Remarks:

*

Note remarks

: KHD 12,7 p6 : 01.02.91 Test sheet Edition Replaces : 11.5.89 : ISO-4113 Test oil

: 0 400 648 142 Combination no.

Injection pump

Pump designation : PE8A95D410LS2608 EP type number : 0 410 698 988

Governor

: RQV350...1250AB990-1 Governor design.

: 0 420 212 182 Governer no.

Customer-spec. information

Customer : KHD

: F8L413F Engine

: 174.0 1st version kW : 2500 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

Test Lines : 1 680 750 014

Outside diameter x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY Test pressure, bar: 25...27

: 2.00...2.10 Prestroke mm

: (1.95...2.15)

Rack travel in mm : 9.00...12.00

: 1-8-7-2-6-5-Firing order

: 0-45-90-135-180-225-Phasing

270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no.

BASIC SETTING

rpm: 1225 1st speed

Rack travel in mm : 10.00...10.10

Del.quantity cm3/: 8.9...9.1

100 s: (8.7...9.3)

cm3 : 0.3Spread

100 s: (0.6)

rpm : 350.0 2nd speed

Rack travel in mm: 6.4...6.6

Del.quantity cm3/ : 0.9...1.5 100 s: (0.6...1.7)

cm3 : 0.5

100 s: (0.7)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

Spread

1st speed rpm : 350

: 1.20...1.30 travel mm

2nd speed rpm : 600

travel mm : 3.80...4.00

rpm : 900 3rd speed

: 5.20...5.50 travel mm

: 1315 4th speed rpm

: 9.30...9.70 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1225 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1225 Speed

: 89.0...91.0 Del.quantity

1000 : (87.0...93.0)

: 3.50 cm3 Spread 1000 : (6.00) RATED SPEED

1st version Control Lever

position degrees: 117...125

Testing:

1st rack travel in: 9.00

rpm : 1265...1275 Speed

2nd rack travel in: 4.00

rpm : 1300...1330 Speed

4th rack travel in: 1450

rpm : 0.00...1.00 Speed

LOW IDLE 1 Control lever

position degrees: 65...73

Testing:

Speed rpm : 100 Minimum rack trave: 8.00 Speed rpm : 350

Rack travel in mm : 6.40...6.60

Rack travel in mm: 2.00

CONSTANT REGULATION

rpm : 370...480 Speed

TORQUE CONTROL

Dimension a mm : 0.50

Torque control curve - 1st version

1st speed rpm : 1225

Rack travel in m: 10.00...10.10

rpm : 500 2nd speed

Rack travel in m: 10.50...10.60

rpm : 700 3rd speed

Rack travel in m: 10.40...10.60

4th speed rpm : 1050

Rack travel in m: 10.20...10.30

START CUT-OUT

1/min: 270 (290) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

: 700 Speed rom

Del.quantity cm3/: 90.5...93.5 1000 s: (88.0...96.0)

BREAKAWAY

1st version 1nm rack travel less than

full load rack tr: 9.00

A10

rpm : 1265...1275 Speed

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 120.0...130.0 1000 s: (117.0...133.0)

Rack travel in mm : 14.70...15.30

Remarks:

:

Note remarks

Test sheet : DAO 14,6 a Edition : 01.02.91 : 7.2.89 Replaces Test oil : ISO-4113

Combination no. : 0 400 648 146

Injection pump

Pump designation : PE8A95D32OLS2672 EP type number : 0 410 698 985

Governor

Governor design. : RQ250/1150AB1191-1R

: 0 420 201 646 Governer no.

Customer-spec. information : DAEWOO Customer

: D2848 M Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

: 172...175 pressure, bar

Test lines : 1 680 750 014

Outside diameter x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 1.50...1.60 Prestroke mm : (1.45...1.65)

Rack travel in mm : 9.00...12.00

: 8-7-2-6-Firing order

4-1

Phasina : 0-45-90-135-180-225-270-315

: 0.50 (0.75) Tolerance + - °

Time to cyl. no. : 8

BASIC SETTING

rpm: 1150 1st speed

Rack travel in mm : 12.90...13.00

Del.guantity cm3/: 10.9...11.1

100 s: (10.7...11.3)

cm3 : 0.3Spread

100 s: (0.4)

rpm : 250.02nd speed Rack travel in mm: 8.1...8.3 Del.quantity cm3/: 0.9...1.5

100 s: (0.6...1.7) cm3 : 0.3

Spread 100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -1 rpm : 600

Rack travel in mm : 13.20...13.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1150 Speed

: 109.0...111.0 Del.quantity 1000 : (107.0...113.0)

: 3.50 Spread cm3

1000 : (4.50)

RATED SPEED

1st version

Setting point:

Speed rpm Rack travel in mm: 13.5

Testing:

1st rack travel in: 11.90

rpm : 1195...1210 Speed 2nd rack travel in: 4.00

rpm : 1245...1275 Speed

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 250 Rack travel in mm : 7.4 Testing: Speed rpm : 100 Minimum rack trave: 8.90 Speed rpm : 250
Rack travel in mm : 7.30...7.50
Rack travel in mm : 2.00
Speed rpm : 385...425 Speed TORQUE CONTROL Dimension a mm :-Torque control curve - 1st version 1st speed rpm : 1150 Rack travel in m: 12.90...13.00 2nd speed rpm : 600 Rack travel in m: 12.90...13.10 FUEL DELIVERY CHARACTERISTICS 1st version rpm : 600 Speed Del.quantity cm3/: 87.0...90.0 1000 s: (84.5...92.5) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 11.90 rpm : 1195...1210 Speed STARTING FUEL DELIVERY Remarks: APPLICATION Special-purpose vehicle

Note remarks

Test sheet : KHD 15,8 k3 Edition : 01.02.91

Replaces

: ISO-4113 Test oil

Combination no. : 0 400 649 168

Injection pump

Pump designation : PE10A90D610/4LS2243

: 0 410 699 103 EP type number

Governor

Governor design. : RQV300...1325AB924DL

: 0 420 214 204 Governer no.

Customer-spec. information

Customer : KHD

: F10L413L Engine

: 225.0 1st version kW : 2650 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening.

: 172...175 pressure, bar

Test lines : 1 680 750 014

Outside diameter x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 1.50...1.60 Prestroke mm

: (1.45...1.65) Rack travel in mm : 9.00...12.00

: 1-10- 9- 4- 3- 6-5- 8- 7- 2 Firing order

Phasing

: 0-27-72-99-144-171-216-243-288-315 : 0.50 (0.75) Tolerance + - °

BASIC SETTING

rpm: 1325 1st speed

Rack travel in mm : 8.80...8.90

Del.quantity cm3/: 6.8...6.9

100 s: (6.6...7.1)

cm3 : 0.3Spread

100 s: (0.5)

rpm : 300.02nd speed Rack travel in mm: 6.4...6.6

Del.quantity cm3/: 0.7...1.4 100 s: (0.5...1.6)

cm3 : 0.5Spread 100 s: (0.7)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

rpm : 300 1st speed

1.40...1.60 travel mm 2nd speed rpm : 465

: 2.30...2.70 travel mm

rpm : 595 3rd speed

travel mm : 3.00...3.50

: 1365 4th speed rpm

: 8.40...8.60 travel mm

rpm : 1435 5th speed

: 9.00...9.20 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1 rpm : 1375

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Spread

rpm : 1325 Speed

: 68.5...69.5 Del.quantity

1000 : (66.5...71.5) : 3.00 cm3

1000 : (5.00) RATED SPEED

1st version Control Lever

position degrees: 116...124

Testing:

1st rack travel in: 7.80

rpm : 1365...1375 Speed

2nd rack travel in: 4.00

rpm : 1415...1445 Speed

LOW IDLE 1

Control Lever

position degrees: 65...73

Testing:

Speed : 100 mon Minimum rack trave: 8.00 nom : 300 Speed

Rack travel in mm : 6.40...6.60

CONSTANT REGULATION

rpm : 375...480 Speed

TORQUE CONTROL

Dimension a mm : 1.20

Torque control curve - 1st version

1st speed rpm : 1325

Rack travel in m: 8.80...8.90

2nd speed rpm : 500

Rack travel in m: 10.00...10.10 3rd speed rpm : 800

Rack travel in m: 10.00...10.10

4th speed rpm : 1000

Rack travel in m: 9.50...9.60

START CUT-OUT

1/min : 220 (300) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

: 1000 Speed rpm

Del.quantity cm3/: 67.0...70.0

1000 s: (65.0...72.0)

Speed rpm: 800 Del.quantity cm3/: 71.5...74.5 1000 s: (69.5...76.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 7.80

Speed rpm : 1365...1375

A14

INTERMEDIATE RATED SPEED Rack travel in mm: 4.00

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 130.0...140.0 1000 s: (127.0...143.0)

Remarks:

Note remarks

Test sheet : KHD 15,8 d1 : 01.02.91 Edition Replaces : 6.83 Test oil : ISO-4113

: 0 400 649 201 Combination no.

Injection pump

Pump designation : PE10A95D610/4LS2452 : D 410 699 998

EP type number

Governor Governor design. : RQV300...1250AB1026D

: 0 420 214 235 Governer no.

Customer spec. information Customer : KHD

: F10L413F Engine

: 235.4 1st version kW : 2500 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.00

Test nozzle holder

assembly : 0 681 343 009

Opening

: 172...175 pressure, bar

Test Lines : 1 680 750 014

Outside diameter x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY Test pressure, bar: 25...27

: 2.00...2.10 Prestroke mm

: (1.95...2.15)

Rack travel in mm : 9.00...12.00

: 1-10- 9- 4- 3- 6- 5-Firing order

8-7-2

Phasing : 0-27-72-99-144-171-

216-243-288-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no.

BASIC SETTING

rpm: 1250 1st speed

Rack travel in mm : 10.30...10.40

Del.quantity cm3/: 9.1...9.3

100 s: (8.9...9.5)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0Rack travel in mm: 6.8...7.0 Del.quantity cm3/: 1.4...2.0 100 s: (1.1...2.2)

cm3 : 0.3Spread

100 s: (0.5)

GUIDE SLEEVE POSITION Control-Lever position

Degree: -1 rpm : 1295 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1250 Speed

: 91.0...93.0 Del.quantity 1000 : (89.0...95.0)

: 3.00 Spread cm3

: (6.00) 1000

RATED SPEED

1st version Control lever

position degrees: 112...120

Testing:

1st rack travel in: 9.30

rpm : 1290...1300 Speed 2nd rack travel in: 4.00

rpm : 1365...1395 Speed

4th rack travel in: 1500

rpm : 0.00...1.00Speed LOW IDLE 1 Control lever position degrees: 58...66 Testina: : 100 Speed rpm Minimum rack trave: 7.50 rpm : 300 Speed Rack travel in mm : 5.90...6.10 : 850 Speed rpm Maximum rack trave: 1.00 CONSTANT REGULATION rpm : 330...420 Speed TORQUE CONTROL Dimension a mm : 0.40 Torque control curve - 1st version rpm : 1250 1st speed Rack travel in m: 10.30...10.40 2nd speed rpm : 1000 Rack travel in m: 10.40...10.60 3rd speed rpm : 700 Rack travel in m: 10.80...10.90 : 400 4th speed rom Rack travel in m: 10.80...10.90 START CUT-OUT Speed 1/min: 220 (240) FUEL DELIVERY CHARACTERISTICS 1st version : 1000 Speed man Del.quantity cm3/: 90.5...93.5 1000 s: (88.5...95.5) Speed rom : 700 Del.quantity cm3/: 91.0...94.0 1000 s: (89.0...96.0) RACK STOP ADJUSTMENT : 600 Speed rpm

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 9.30

rpm : 1290...1300 Speed

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 125.0...135.0 1000 s: (122.0...138.0)

Rack travel in mm: 14.30...15.30

Remarks:

Note remarks

: MB 8,7 k 1 Test sheet

: 18.01.91 Edition

Replaces

Test oil : ISO-4113

Combination no. : 0 400 676 187

Injection pump

Pump designation : PE6A90D410RS2124 EP type number : 0 410 696 141

Governor

Governor design. : RSV350...1250A1C750L Governor no. : 0 420 232 488

Customer-spec. information

Customer : MERCEDES-BENZ

: 0M 360 Engine

1st version kW : 132.0 : 2500 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

: 172...175 pressure, bar

Test lines : 1 680 750 014

Outside diameter x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.15...2.25

: (2.10...2.30)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

rpm: 1230 1st speed

Rack travel in mm : 10.10...10.20

Del.quantity cm3/: 8.4...8.5

100 s: (8.2...8.7)

Spread cm3 : 0.3

100 s: (0.5)

2nd speed rpm : 350.0 Rack travel in mm: 5.7...6.3 Del.quantity cm3/: 1.2...1.4

100 s: (1.0...1.6)

Spread cm3 : 0.2

100 s: (0.4)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3 rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension Click setting x : 5.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1230

: 84.0...85.0 Del.quantity

1000 : (82.0...87.0)

: 3.00 Spread cm3

1000 : (5.00)

RATED SPEED

1st version

Control lever

position degrees: 117...125

Testing:

1st rack travel in: 9.10

Speed rpm : 1280...1290

2nd rack travel in: 4.00

rpm : 1340...1370 Speed

4th rack travel in: 1400 rpm : 0.30...1.70 Speed LOW IDLE 1 Control Lever position degrees: 74...82 Setting point w/out bumper spring rpm : 350 Rack travel in mm: 5.5 Testing: rpm : 100 Speed Minimum rack trave: 19.50 rpm : 350 Rack travel in mm : 5.90...6.10 Rack travel in mm : 2.00 rpm : 490...550 SET IDLE AUXILIARY SPRING Rack travel in mm: 2.00 TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1230 Rack travel in m: 10.10...10.20 nd speed rpm : 500 Rack travel in m: 11.00...11.10 2nd speed 3rd speed rpm : 700 Rack travel in m: 10.50...10.70 FUEL DELIVERY CHARACTERISTICS 1st version rpm : 550 Speed Del.quantity cm3/: 83.0...85.0 1000 s: (80.5...87.5) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 9.10 Speed rpm : 1280...1290 STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/: 115.0...125.0

1000 s: (112.0...128.0)

Rack travel in mm : 14.60...15.00

Speed rpm : 350 Rack travel in mm : 5.70...6.30

Del.quantity cm3/: 12.0...14.0 1000 s: (10.0...16.0) Spread cm3 : 2.50 1000 s: (4.50)

Remarks:

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LOW IDLE

Note remarks

Test sheet : MB 4,0 j Edition : 01.02.91

Replaces

Test oil : ISO-4113

Combination no. : 0 400 844 095

Injection pump

Pump designation : PES4A95D410RS2809 : 0 410 894 993 EP type number

Governor

: RQV300...1400AB1065-Governor design.

23L

: 0 420 212 227 Governer no.

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : OM 364

: 65.0 1st version kW Rated speed : 2800

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Openina

: 172...175 pressure, bar

Test lines : 1 680 750 015

Outside diameter x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY Test pressure, bar: 25...27

Prestroke mm

: 3.20...3.30 : (3.15...3.35) Rack travel in mm : 9.00...12.00

: 1-3-4-2 Firing order

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm: 1400

Rack travel in mm : 9.90...10.00

Del.guantity cm3/ : 5.8...6.0

100 s: (5.6...6.2)

cm3 : 0.3Spread

100 s: (0.6)

2nd speed rpm : 300.0 Rack travel in mm : 8.9...9.1 Del.quantity cm3/: 0.8...1.2 100 s: (0.5...1.4)

cm3 : 0.3Spread 100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed 300 rom :

: 0.80...1.30 travel mm

rpm : 500 2nd speed : 2.30...2.80 travel mm

: 750 3rd speed rpm

: 4.10...4.30 travel mm

1500 4th speed rom

: 8.50...8.60 travel mm

GUIDE SLEEVE POSITION Control-lever position

> Degree: -1 rpm : 1450

Speed Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1400 Speed

: 58.0...60.0 Del.quantity

1000 : (56.0...62.0)

: 3.50 cm3 Spread

1000 : (6,00)

RATED SPEED

1st version Control lever position degrees: 107...115 Testina: 1st rack travel in: 8.90 Speed rpm : 1450...1460 2nd rack travel in: 4.00 rpm : 1545...1575 Speed 4th rack travel in: 1670 Speed rpm : 0.00...1.00LOW IDLE 1 Control Lever position degrees: 69...77 Testina: Speed : 100 rpm Minimum rack trave: 10.50 rpm : 300 Speed Rack travel in mm : 8.90...9.10 CONSTANT REGULATION Speed rpm : 500...650 TORQUE CONTROL Dimension a mm

: 1.40 Torque control curve - 1st version 1st speed rpm : 1400 Rack travel in m: 9.90...10.00 2nd speed rpm : 400 Rack travel in m: 11.30...11.60

3rd speed rpm : 650 Rack travel in m: 10.90...11.10 4th speed rpm : 900

Rack travel in m: 10.40...10.70

START CUT-OUT

1/min: 220 (240) Speed

FUEL DELIVERY CHARACTERISTICS

1st version Speed

: 400 rpm Del.quantity cm3/: 48.0...51.0

1000 s: (45.5,..53.5)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 8.90

rpm : 1450...1460 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 78.0...88.0

1000 s: (75.0...91.0)

Rack travel in mm : 14.40...14.80

Remarks:

Set shutoff stop to contact at 3.0...3.5 mm control-rod travel.

A20

Note remarks

Test sheet : MB 4,0 j 1 : 01.02.91 Edition

Replaces Test oil : ISO-4113

: 0 400 844 096 Combination no.

Injection pump

Pump designation : PES4A95D41ORS2809 EP type number : 0 410 894 993

Governor

: RQV300...1400AB1065-Governor design.

23L

: 0 420 212 227 Governer no.

Customer-spec. information

Customer : MERCEDES-BENZ

: OM 364 Engine

: 65.0 1st version kW : 2800 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening |

pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter x Wall thickness

: 6.00X1.50X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 3.20...3.30 Prestroke mm

: (3.15...3.35)

Rack travel in mm : 9.00...12.00

: 1-3-4-2 Firing order

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm: 1400

Rack travel in mm : 9.90...10.00

Del.quantity cm3/: 5.8...6.0

100 s: (5.6...6.2)

cm3 : 0.3Spread

100 s: (0.6)

rpm : 300.02nd speed Rack travel in mm: 8.9...9.1 Del.quantity cm3/: 0.8...1.2

100 s: (0.5...1.4)

cm3 : 0.3Spread 100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL rpm : 300 1st speed

: 0.80...1.30 travel mm 500 2nd speed rpm :

: 2.30...2.80 rpm : 750 travel mm

3rd speed : 4.10...4.30 travel mm

rpm : 1500 4th speed

: 8.50...8.60 travel mm

GUIDE SLEEVE POSITION

Control-lever position Degree: -1

rpm : 1450 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1400 Speed

: 58.0...60.0 Del.quantity

1000 : (56.0...62.0)

: 3.50 Spread cm3

1000 : (6.00)

RATED SPEED

1st version Control lever position degrees: 107...115 Testing: 1st rack travel in: 8.90 rpm : 1450...1460 Speed 2nd rack travel in: 4.00 Speed rpm: 1545...1575 4th rack travel in: 1670 Speed rpm : 0.00...1.00 LOW IDLE 1 Control lever position degrees: 69...77 Testina: Speed rom : 100 Minimum rack trave: 10.50 rpm : 300 Speed Rack travel in mm : 8.90...9.10 CONSTANT REGULATION rpm : 500...650 Speed TORQUE CONTROL Dimension a mm : 1.40 Torque control curve - 1st version rpm : 1400 1st speed Rack travel in m: 9.90...10.00 2nd speed rpm : 400 Rack travel in m: 11.30...11.60 3rd speed rpm : 650 Rack travel in m: 10.90...11.10 4th speed rpm : 900 Rack travel in m: 10.40...10.70 START CUT-OUT 1/min: 220 (240) Speed FUEL DELIVERY CHARACTERISTICS 1st version Speed rpm: 400 Del.quantity cm3/: 48.0...51.0 1000 s: (45.5...53.5) **BREAKAWAY**

1st version 1mm rack travel less than

full load rack tr: 8.90 rpm : 1450...1460 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 78.0...88.0 1000 s: (75.0...91.0)

Rack travel in mm : 14.40...14.80

Remarks:

Set shutoff stop to contact at 3.0...3.5 mm control-rod travel.

Note remarks

Test sheet : RAB 9,7 c Edition : 25.01.91 : 5.84 Replaces Test oil : ISO-4113

Combination no. : 0 400 846 495

Injection pump

Pump designation : PES6A950410RS2653 EP type number : 0 410 896 922

Governor

Governor design. : RQ200/1100AB1167L Governer no. : 0 420 200 082

Customer-spec. information Customer : RABA

Engine : D2156MT/MKT/MTN6

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

: 172...175 pressure, bar

: 1 680 750 014 Test lines

Outside diameter x Wall thickness

x Length mm : 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 1.70...1.80 Prestroke mm

: (1.65...1.85) Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-Firing order

Phasing : 0-60-120-180-240-300

Tolerance $+ - ^{\circ} : 0.50 (0.75)$

Time to cyl. no. : 1

BASIC SETTING

rpm : 1100 1st speed

Rack travel in mm : 12.60...12.70

Del.quantity cm3/: 12.6...12.8

100 s: (12.4...13.0)

cm3 : 0.3Spread

100 s: (0.6)

2nd speed rpm : 200.0 Rack travel in mm: 6.3...6.5 Del.quantity cm3/: 0.9...1.5

100 s: (0.6...1.7)

cm3 : 0.3Spread 100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -2

rpm : 600 Speed

Rack travel in mm : 19.20...20.60

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100 Aneroid pressure h: 700

: 126.5...128.5 Del.quantity 1000 : (124.5...130.5)

cm3 : 3.00 Spread

1000 : (6.00)

RATED SPEED

1st version

Setting point:

: 600 rpm Rack travel in mm: 19.9

Testing:

1st rack travel in: 11.60 Speed rpm : 1145...1160

2nd rack travel in: 4.00

rpm : 1190...1220 Speed

LOW IDLE 1

Setting point w/out bumper spring

rpm : 200 Speed Rack travel in mm: 6.4

Testing:

Speed rpm : 100 Minimum rack trave: 7.60 rpm : 200

Rack travel in mm : 6.30...6.50

Rack travel in mm : 2.00 rpm : 320...360 Speed Speed rpm : 450

Maximum rack trave: 1.00

TORQUE CONTROL

Dimension a mm : 0.55

Torque control curve - 1st version

rpm : 1100 1st speed

Rack travel in m: 12.60...12.70

rpm : 500 2nd speed

Rack travel in m: 14.20...14.30

3rd speed rpm : 765
Rack travel in m: 13.70...13.90

4th speed rpm : 920

Rack travel in m: 12.90...13.10

Aneroid/Altitude Compensator Test

1st version Setting

rpm : 500 hPa : 700 Speed rpm Pressure

: 13.70...13.80 Rack travel mm

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 10.40...10.50

2nd pressure hPa : 236

Rack travel in m: 12.80...12.90

3rd pressure hPa : 120 Rack travel in m: 11.20...11.40

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700

rpm : 700 Del.quantity cm3/: 135.0...138.0

1000 s: (133.0...140.0)

Aneroid pressure h: -

Speed rpm : 500 Del.quantity cm3/: 82.5...84.5

1000 s: (80.5...86.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.60

Speed rpm : 1145...1160

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 156.5...166.5 1000 s: (153.5...169.5)

Rack travel in mm : 17.20...17.40

Remarks:

Check electrically unlatched starting fuel delivery (EES) with 24 volt.

On activation of the starting solenoid, the start position must be reached.

Note remarks

: RAB 9,7 b 1 : 25.01.91 Test sheet Edition : 28.11.90 Replaces Test oil : ISO-4113

Combination no. : 0 400 846 543

Injection pump

Pump designation : PES6A95D420LS2595 : 0 410 896 930 EP type number

Governor

Governor design. : RQ200/1100AB1210R

: 0 420 201 643 Governer no.

Customer-spec. information : RABA Customer

: D2156MT6U Engine

: 188.0 1st version kW : 2200 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Openina

: 172...175 pressure, bar

Test lines : 1 680 750 014

Outside diameter

x Wall thickness

x Length mm : 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.00...2.10 Prestroke mm

: (1.95...2.05)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasina

Tolerance + - * : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 12.60...12.70

Del.quantity cm3/: 12.6...12.8

100 s: (12.4...13.0)

cm3 : 0.3Spread

100 s: (0.6)

2nd speed rpm : 200.0 Rack travel in mm : 7.3...7.5 Del.quantity cm3/: 0.9...1.5

100 s: (0.6...1.7) cm3 : 0.3 Spread

100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -2

rpm : 600

Rack travel in mm : 19.20...20.60

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1100 Speed Aneroid pressure h: 700

: 126.5...128.5 Del.quantity 1000 : (124.5...130.5)

: 3.00 Spread cm3

1000 : (6.00)

RATED SPEED

1st version

Setting point:

rpm Rack travel in mm: 19.9

Testing:

1st rack travel in: 11.60 Speed rpm : 1145...1160

2nd rack travel in: 4.00

Speed rpm : 1190...1220 LOW IDLE 1

Setting point w/out bumper spring

: 200 rom Rack travel in mm: 6.4

Testing:

Speed : 100 rpm Minimum rack trave: 7.60 rpm

Rack travel in mm : 6.30...6.50

Rack travel in mm : 2.00 Speed rpm : 320...360 Speed : 450 rom Maximum rack trave: 1.00

TORQUE CONTROL

Dimension a mm : 0.55

Torque control curve - 1st version

1st speed rpm : 1100

Rack travel in m: 12.60...12.70

2nd speed rpm : 500

Rack travel in m: 14.20...14.30

3rd speed rpm: 820

Rack travel in m: 13.70...13.90

4th speed rpm : 995

Rack travel in m: 12.90...13.10

Aneroid/Altitude Compensator Test

1st version

Settina

Speed : 500 rom hPa : 700 Pressure

Rack travel mm : 13.80...13.90

Measurement

Speed $1/\min : 500$

1st pressure hPa : -

Rack travel in m: 11.10...11.20

2nd pressure hPa : 340

Rack travel in m: 12.80...12.90

3rd pressure hPa : 250

Rack travel in m: 11.20...11.40

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700 rpm : 700 **beea**2

Del.quantity cm3/: 135.0...138.0 1000 s: (133.0...140.0)

Aneroid pressure h: rpm : 500 Speed

Del.quantity cm3/: 82.5...84.5

1000 s: (80.5...86.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.60

rpm : 1145...1160 Speed

STARTING FUEL DELIVERY

Speed : 100 rpm

Del.quantity cm3/: 177.0...187.0

1000 s: (174.0...190.0)

Remarks:

Check electrically unlatched starting

fuel delivery (EES) with 24 volt.

On activation of the starting solenoid, the start position must be reached.

APPLICATION

Omnibus

Note remarks

Test sheet : DAF 6,2 p 4
Edition : 01.02.91
Replaces : 28.9.90
Test oil : ISO-4113

Combination no. : 0 400 846 585

Injection pump

Pump designation : PES6A95D32ORS2693 EP type number : 0 410 896 914

Governor

Governor design. : RQ300/1300AB1253-1R

Governer no. : 0 420 201 650

Customer-spec. information Customer : DAF

Engine: NS 133

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Opening.

pressure, bar : 172...175

Test Lines : 1 680 750 015

Outside diameter x Wall thickness

x Length mm : 6.00x1.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ___

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.00...2.10

: (1.95...2.15) Rack travel in mm : 7.50...10.50

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - * : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8.50...9.50 & maximum rack tra: 21.00 Difference ° CS : 2.50...3.50

BASIC SETTING

1st speed rpm: 850

Rack travel in mm : 11.50...11.60

Del.quantity cm3/: 7.6...7.7

100 s: (7.4...7.9)

Spread cm3: 0.3

100 s: (0.6)

2nd speed rpm: 300.0

Rack travel in mm : 6.7...6.9 Del.quantity cm3/ : 0.7...1.1

100 s: (0.4...1.3)

Spread cm3 : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -2

Speed rpm : 800 Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm: 850 Aneroid pressure h: 700

Del.quantity : 76.5...77.5

1000 : (74.5...79.5)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Setting point:

Speed rpm: 800 Rack travel in mm: 20.0

Testing:

1st rack travel in: 9.50

Speed rpm : 1340...1350 2nd rack travel in: 4.00 rpm : 1410...1440 Speed 4th rack travel in: 1550 rpm : 0.00...1.00Speed LOW IDLE 1 Setting point w/out bumper spring rpm : 300 Rack travel in mm : 6.8 Testing: Speed rpm : 100 Minimum rack trave: 7.50 rpm : 300 Speed Rack travel in mm : 6.70...6.90 Rack travel in mm : 2.00 Speed rpm : 540...580 TORQUE CONTROL Dimension a mm : 0.55 Torque control curve - 1st version 1st speed rpm : 1290 Rack travel in m: 10.50...10.60 rpm : 800 2nd speed Rack travel in m: 11.80...12.40 3rd speed rpm : 950 Rack travel in m: 11.20...11.80 4th speed rpm : 1050 Rack travel in m: 10.70...11.10 Aneroid/Altitude Compensator Test 1st version Setting Speed : 600 rpm hPa : 700 Pressure Rack travel mm : 11.50...11.60 Measurement $1/\min : 600$ Speed 1st pressure hPa : -Rack travel in m: 10.10...10.30 2nd pressure hPa : 160 Rack travel in m: 10.70...10.80 START CUT-OUT Speed 1/min: 220 (240) FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 700

rpm : 1290

Del.quantity cm3/: 73.0...75.0 1000 s: (70.5...77.5) Aneroid pressure h: -Speed rpm : 600 Del.quantity cm3/: 50.5...51.5 1000 s: (48.5...53.5)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 9.50 Speed rpm : 1340...1350

LOW IDLE

Remarks:

8SA

Speed

Note remarks

Test sheet : MB 6,0 j 1 Edition : 01.02.91

Replaces

Test oil : ISO-4113

Combination no. : 0 400 846 592

Injection pump

Pump designation : PES6A95D41ORS2797 EP type number : 0 410 896 900

Governor

: RQV300...1200AB1065-Governor design.

24L

: 0 420 212 228 Governer no.

Customer-spec. information

: MERCEDES-BENZ Customer

: 0M 366 Engine

: 92.0 1st version kW : 2400 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Openina

: 172...175 pressure, bar

Test lines : 1 680 750 015

Outside diameter x Wall thickness

x Length mm : 6.00X1.50X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 3.20...3.30 Prestroke mm

: (3.15...3.35)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm: 1200

Rack travel in mm : 9.90...10.00

Del.quantity cm3/: 5.8...6.0

100 s: (5.6...6.2)

cm3 : 0.3Spread

100 s: (0.6)

rpm : 300.02nd speed Rack travel in mm: 8.9...9.1 Del.quantity cm3/: 0.8...1.2

100 s: (0.5...1.4) cm3 : 0.3

Spread 100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 300 1st speed

: 0.80...1.30 travel mm

rpm : 500 2nd speed

: 2.30...2.80 rpm : 750 travel mm

3rd speed

: 4.10...4.30 travel mm rpm : 1500

4th speed

: 8.50...8.60 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1450 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1200 Speed

Del.quantity : 58.5...60.5

1000 : (56.5...62.5)

: 3.50 Spread cm3

1000 : (6.00)

RATED SPEED

1st version Control Lever position degrees: 104...112 Testing: 1st rack travel in: 8.90 rpm : 1240...1250 Speed 2nd rack travel in: 4.00 Speed rpm: 1370...1400 4th rack travel in: 1550 Speed rom : 0.00...1.00 LOW IDLE 1 Control Lever position degrees: 69...77 Testing: Speed : 100 man Minimum rack trave: 10.00 rpm : 300 Speed Rack travel in mm : 8.90...9.10 CONSTANT REGULATION rpm : 525...625 Speed TORQUE CONTROL Dimension a mm : 1.20 Torque control curve - 1st version 1st speed rpm : 1200 Rack travel in m: 9.90...10.00 2nd speed rpm : 500 Rack travel in m: 11.10...11.20 rpm : 690 3rd speed Rack travel in m: 10.70...10.90 4th speed rpm : 840 Rack travel in m: 10.30...10.60 START CUT-OUT 1/min: 220 (240) Speed FUEL DELIVERY CHARACTERISTICS 1st version : 500 Speed rpm Del.quantity cm3/: 44.0...47.0 1000 s: (41.5...49.5) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 8.90 rpm : 1240...1250 Speed

Remarks:

:

STARTING FUEL DELIVERY

Note remarks

: KHD 1 0 6 Test sheet : 16.01.91 Edition : 21.9.90 Replaces Test oil : ISO-4113

Combination no. : 0 400 864 081

Infection pump

Pump designation: PES4A85D410/3RS2799

: 0 410 884 944 EP type number

Governor

: RSV325...1250A2C2253 Governor design.

: 0 420 232 547 Governer no.

Customer-spec. information : KHD Customer

: BF4L913 Engine

: 78.0 1st version kW Rated speed : 2500

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.50...2.60 Prestroke mm

: (2.45...2.65)

Rack travel in mm : 9.00...12.00 Firing order : 1-3-4-2

: 0-90-180-270 Phasing

Tolerance + - * : 0.50 (0.75)

BASIC SETTING

rpm: 1250 1st speed

Rack travel in mm : 11.70...11.80

Del.quantity cm3/: 8.4...8.5

100 s: (8.2...8.7)

cm3 : 0.3Spread

100 s: (0.5)

2nd speed rpm : 325.0 Rack travel in mm : 7.5...7.7 Del.quantity cm3/ : 1.2...1.8 100 s: (1.0...2.0)

cm3 : 0.2Spread

100 s: (0.4)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800 Speed

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 3.75

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1250 Speed Aneroid pressure h: 1000

Del.quantity : 84.0...85.0 1000 : (82.0...87.0)

: 3.00 cm3

Spread 1000 : (5.00)

RATED SPEED

1st version

Control lever

position degrees: 95...103

Testing:

1st rack travel in: 10.70

rpm : 1290...1300 Speed

2nd rack travel in: 4.00

rpm : 1345...1375 Speed

4th rack travel in: 1480 rpm : 0.30...1.40 Speed LOW IDLE 1 Control lever position degrees: 65...73 Setting point w/out bumper spring Speed rpm: 325 Rack travel in mm: 6.0 Testing: rpm : 100 Speed Minimum rack trave: 19.50 Speed rpm: 325
Rack travel in mm: 5.90...6.10
Rack travel in mm: 2.00
Speed rpm: 350...410 SET IDLE AUXILIARY SPRING Rack travel in mm : 2.00 TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1250 Rack travel in m: 11.70...11.80 2nd speed rpm : 500 Rack travel in m: 12.00...12.10 4th speed rpm : 850 Rack travel in m: 11.80...12.00 Aneroid/Altitude Compensator Test 1st version Setting rpm : 500 Speed hPa : 1000 Pressure Rack travel mm : 12.00...12.10 Measurement 1/min: 500 Speed 1st pressure hPa : -Rack travel in m: 10.80...10.90 2nd pressure hPa : 300 Rack travel in m: 11.60...11.70 3rd pressure hPa : 230 Rack travel in m: 11.20...11.40 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1000 Speed rpm : 750

Del.quantity cm3/: 80.5...81.5

rpm : 500

Aneroid pressure h: -

1000 s: (78.0...84.0)

Del.quantity cm3/: 58.0...60.0 1000 s: (56.0...62.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 10.70 rpm : 1290...1300 Speed STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/: 115.0...125.0 1000 s: (112.0...128.0) Rack travel in mm : 17.60...18.00 Remarks: APPLICATION Wheel loader Excavator

Speed

Note remarks

: KHD 1 q 48 Test sheet Edition : 01.02.91

Replaces

Test oil : ISO-4113

Combination no. : 0 400 864 083

Injection pump

Pump designation : PES4A95D410/3RS2789

: 0 410 894 995 EP type number

Governor

: RSV325...1175A5C2163 Governor design.

-6L

: 0 420 232 548 Governer no.

Customer-spec. information

Customer : KHD

: F4L913 Engine

: 55.0 1st version kW : 2350 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

Test Lines : 1 680 750 014

Outside diameter x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 3.00...3.10 Prestroke mm

: (2.95...3.15)

Rack travel in mm : 9.00...12.00

Firing order : 1-3-4-2

Phasing : 0-90-180-270

Tolerance $+ - \circ : 0.50 (0.75)$

BASIC SETTING

rpm: 1175 1st speed

Rack travel in mm : 11.90...12.00

Del.quantity cm3/: 7.4...7.6

100 s: (7.2...7.8)

cm3 : 0.3Spread

100 s: (0.6)

rpm : 325.0 2nd speed Rack travel in mm: 9.3...9.5 Del.quantity cm3/: 1.0...1.6

100 s: (0.7...1.8) cm3 : 0.3 Spread

100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800 Speed

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 3.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1175 Speed

: 74.5...76.5 Deliquantity

1000 : (72.5...78.5)

: 3.50 Spread cm3

: (6.00) 1000

RATED SPEED

1st version

Control Lever

position degrees: 97...105

Testing:

1st rack travel in: 10.90

rpm : 1215...1225 Speed

2nd rack travel in: 4.00

: 1245...1275 Speed rpm

3rd rack travel in: 4.00

Speed rpm : 1260...1290 4th rack travel in: 1430 rpm : 0.30...1.40 Speed LOW IDLE 1 Control Lever position degrees: 65...73 Setting point w/out bumper spring Speed rpm : 325 Rack travel in mm: 8.9 Testing: Speed : 100 rom Minimum rack trave: 19.50 rpm : 325 Speed Rack travel in mm : 9.30...9.50 Rack travel in mm: 2.00 : 395...455 Speed rom TORQUE CONTROL Torque control curve - 1st version rom : 1175 1st speed Rack travel in m: 11.90...12.00 2nd speed rpm : 500 Rack travel in m: 12.30...12.40 4th speed rpm : 950 Rack travel in m: 12.10...12.30 FUEL DELIVERY CHARACTERISTICS 1st version Speed : 500 rpm Del.quantity cm3/: 58.5...61.5 1000 s: (56.0...64.0) Speed rpm: 800 Del.quantity cm3/: 69.0...72.0 1000 s: (66.5...74.5) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 10.90 rpm : 1215...1225 Speed STARTING FUEL DELIVERY rpm : 100 Speed Del.quantity cm3/: 120.0...130.0 1000 s: (117.0...133.0) Rack travel in mm : 19.50...21.00 Remarks: : DX 4.31

Tractor (tractor engines)

806

APPLICATION

Note remarks

Test sheet : KHD 1 o 8 Edition : 16.01.91

Replaces : ISO-4113 Test oil

: 0 400 864 087 Combination no.

Injection pump

Pump designation : PES4A85D410/3RS2799

: 0 410 884 944 EP type number

Governor

: RSV325...1075A8C2253 Governor design.

-1L

: 0 420 232 555 Governer no.

Customer-spec. information

Customer : KHD

: BF4I 913 Engine

: 65.0 1st version kW : 2150 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Openina

pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant. per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.50...2.60 Prestroke mm

: (2.45...2.65)

Rack travel in mm : 9.00...12.00 Firing order : 1-3-4-2

Phasina : 0-90-180-270

: 0.50 (0.75) Tolerance + - °

BASIC SETTING

rpm: 1060 1st speed

Rack travel in mm : 11.30...11.40

Del.guantity cm3/ : 7.8...7.9

100 s: (7.6...8.1)

cm3 : 0.3Spread

100 s: (0.5)

2nd speed rpm : 325.0 Rack travel in mm : 7.5...7.7 Del.quantity cm3/ : 1.2...1.8

100 s: (1.0...2.0)

cm3 : 0.2Spread 100 s: (0.4)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800 Speed

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 4.25

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1060 Aneroid pressure h: 1000

Del.quantity : 78.0...79.0 1000 : (76.9...81.0)

: 3.00 cm3

: (5.00) 1000

RATED SPEED

Spread

1st version

Control lever

position degrees: 95...103

Testing:

1st rack travel in: 10.30

rpm : 1100...1110 Speed

2nd rack travel in: 4.00

rpm : 1130...1160 Speed

3rd rack travel in: 4.00 Speed rpm: 1145...1175 4th rack travel in: 1310 rpm : 0.30...1.40 Speed LOW IDLE 1 Control lever position degrees: 14...21 Setting point w/out bumper spring rpm : 325° Rack travel in mm: 5.5 Testing: rpm : 100 Speed Minimum rack trave: 19.50 rpm : 325 Rack travel in mm : 5.90...6.10 Rack travel in mm : 2.00 rpm : 395...455 Speed SET IDLE AUXILIARY SPRING Rack travel in mm: 2.00 TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1060 Rack travel in m: 11.30...11.40 2nd speed rpm : 500 Rack travel in m: 11.80...11.90 4th speed rpm : 870 Rack travel in m: 11.40...11.60 Aneroid/Altitude Compensator Test 1st version Setting Speed : 500 rpm Pressure hPa : 1000 Rack travel mm : 11.80...11.90 Measurement 1/min: 500 Speed 1st pressure hPa : -Rack travel in m: 11.00...11.20 2nd pressure hPa : 330 Rack travel in m: 11.50...11.60 3rd pressure hPa : 250 Rack travel in m: 11.20...11.40 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1000

Speed rpm : 750
Del.quantity cm3/ : 76.0...78.0
1000 s: (73.5...80.5)

Aneroid pressure h: Speed rpm : 500
Del.quantity cm3/ : 58.5...59.5
1000 s: (56.5...61.5)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 10.30
Speed rpm : 1100...1110

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 120.0...130.0
1000 s: (117.0...133.0)

APPLICATION

Remarks:

Wheel loader

Excavator

B08

Note remarks

: FOR 5,9 f 6 : 18.01.91 Test sheet Edition : 14.12.90 Replaces : ISO-4113 Test oil

Combination no. : 0 400 866 102

Injection pump

Pump designation : PES6A90D210RS2629 EP type number : 0 410 896 075

Governor

Governor design. : RSV350...1300A0c2142

Governer no. : 0 420 232 375

Customer-spec. information Customer : FORD/GB

: DOVER 363 Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening |

: 172...175 pressure, bar

: 1 680 750 014 Test lines

Outside diameter x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values _

BEGINNING OF DELIVERY Test pressure, bar: 25...27

: 2.70...2.80 Prestroke mm

: (2.65...2.85)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6Phasing : 0-60-120-180-240-300

Tolerance + - * : 0.50 (0.75)

BASIC SETTING

rpm: 1250 1st speed

Rack travel in mm : 11.70...11.80

Del.quantity cm3/: 5.8...5.9

100 s: (5.6...6.1)

cm3 : 0.3Spread

100 s: (0.4)

rpm : 350.0 2nd speed Rack travel in mm : 7.4...7.6 Del.quantity cm3/: 0.7...1.3 100 s: (0.5...1.5)

cm3 : 0.2 Spread 100 s: (0.4)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800 Speed

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x :?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1250 Speed

: 58.5...59.5 Del.quantity 1000 : (56.5...61.5)

: 3.00 Spread cm3

: (4.50) 1000

RATED SPEED

1st version Control lever

position degrees: 121...129

Testing:

1st rack travel in: 10.70

rpm : 1370...1380 Speed

2nd rack travel in: 4.00

rpm : 1490...1520 Speed

3rd rack travel in: 4.00

rpm : 1515...1545 Speed

4th rack travel in: 1680

rpm : 0.30...1.70

LOW IDLE 1 Control lever

position degrees: 84...92 Setting point w/out bumper spring

Speed rpm : 350 Rack travel in mm : 7.0

Testing:

: 100 Speed rpm Minimum rack trave: 19.50

Speed rpm : 350
Rack travet in mm : 7.40...7.60

Rack travel in mm : 2.00 rpm : 560...610 Speed

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1250

Rack travel in m: 11.70...11.80

rpm : 500 2nd speed 3rd speed

d speed rpm : 700 Rack travel in m: 11.90...12.00

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 10.70

rpm : 1370...1380 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 76.0...90.0

1000 s: (73.0...93.0)

Rack travel in mm : 19.50...21.00

Remarks:

At start of delivery, locating pin must latch into slit in pointer.

B10

Note remarks

: VAL 3,3 a 2 : 25.01.91 Test sheet Edition

Replaces

Test oil : TSO-4113

Combination no. : 0 400 873 040

Injection pump

Pump designation : PES3A95D32ORS2655 : 0 410 893 997 EP type number

Governor

: RSV375...1175A2C2178 Governor design.

-10R

: 0 420 233 281 Governer no.

Customer—spec. information : VALMET Customer

Engine : 320 DS

1st version kW : 55.0

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter x Wall thickness

: 6.00x2.00x600 x Lenath mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.50...2.60 Prestroke mm

: (2.45...2.65)

Rack travel in mm : 9.00...12.00

Firing order : 1- 2- 3

: 0-120-240 Phasing

: 0.50 (0.75) Tolerance + - °

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8.50...9.50

& maximum rack tra: 21.00

Difference ° CS : 4.50...5.50

BASIC SETTING

rom: 1175 1st speed

Rack travel in mm : 10.70...10.80

Del.quantity cm3/: 8.5...8.7

100 s: (8.3...8.9)

cm3 : 0.3Spread

100 s: (0.6)

rpm : 375.0 2nd speed Rack travel in mm: 4.2...4.4 Del.quantity cm3/: 0.8...1.5

100 s: (0.5...1.7) Spread cm3 : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800 Speed

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 4.75

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed : 1175 rom

Del.quantity

: 85.5...87.5 1000 : (83.5...89.5)

: 3.50 Spread cm3

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 97...106

Testina: 1st rack travel in: 9.70 rpm : 1215...1225 Speed 2nd rack travel in: 4.00 Speed rom : 1270...1300 3rd rack travel in: 4.00 Speed rpm : 1275...1305 4th rack travel in: 1440 Speed rpm : 0.30...1.40 LOW IDLE 1 Control Lever position degrees: 71...79 Setting point w/out bumper spring morn Rack travel in mm: 3.8 Testing: rpm : 100 Speed Minimum rack trave: 19.50 rpm : 375 Speed Rack travel in mm : 4.20...4.40 Rack travel in mm : 2.00 rpm : 420...480 Speed TORQUE CONTROL Torque control curve - 1st version rpm : 1175 1st speed Rack travel in m: 10.70...10.80 2nd speed rpm : 500 Rack travel in m: 11.20...11.30 4th speed rpm : 990 Rack travel in m: 10.90...11.10 FUEL DELIVERY CHARACTERISTICS 1st version Speed rpm : 500 Del.quantity cm3/ : 74.5...77.5 1000 s: (72.0...80.0) 1000 s: (7.) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 9.70 rpm : 1215...1225 Speed STARTING FUEL DELIVERY beea rpm : 100 Del.quantity cm3/: 190.0...200.0 1000 s: (187.0...203.0)

Rack travel in mm : 19.50...21.00

IOW TOLF

Speed rpm : 375 Rack travel in mm : 4.20...4.40

Del.quantity cm3/: 8.0...15.0 1000 s: (5.5...17.5) Spread cm3 : 3.50 1000 s: (5.50)

Remarks:

APPLICATION

Tractor (tractor engines)

Note remarks

Test sheet : MB 4,0 e 2 : 20.12.90 Edition

Replaces

: ISO-4113 Test oil

Combination no. : 0 400 874 248

Injection pump

Pump designation : PES4A900410RS2728 EP type number : 0 410 894 030

Governor

: RSV350...750A0C2240-Governor design.

3L

: 0 420 232 559 Governer no.

Customer-spec. information

: MERCEDES-BENZ Customer

: 0M364 Engine

: 39.0 1st version kW Rated speed : 1500

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter x Wall thickness

x Length mm : 6.00x1.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.25...2.35 Prestroke mm

: (2.20...2.40)

Rack travel in mm : 9.00...12.00

Firing order : 1-3-4-2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

rpm: 700 1st speed

Rack travel in mm : 12.00...12.10

Del.quantity cm3/: 5.7...5.9

100 s: (5.5...6.1)

cm3 : 0.3Spread

100 s: (0.4)

2nd speed rpm : 350.0Rack travel in mm: 6.9...7.1 Del.quantity cm3/: 1.0...1.4 100 s: (0.8...1.6)

Spread cm3 : 0.2100 s: (0.4)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800 Speed Rack travel in mm : 0.30...1.00

Governor spring pre-tension Click setting x : 2.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

: 57.0...59.0 1000 : (55.0...61.0) Del.quantity

: 3.00 Spread cm3

1000 : (4.50)

RATED SPEED

1st version Control lever

position degrees: 76...84

Testing:

1st rack travel in: 11.00

rpm : 750...755 Speed

2nd rack travel in: 4.00 rpm : 780...793 Speed

4th rack travel in: 850

rpm : 0.30...1.40 Speed

LOW IDLE 1 Control lever

position degrees: 62...70

Setting point w/out bumper spring Speed rpm : 350 Rack travel in mm : 7.0

Testing:

rpm : 100 Speed Minimum rack trave: 19.50 Speed rpm : 350

Rack travel in mm: 6.90...7.10
Rack travel in mm: 2.00
Speed rpm: 375...405

SET IDLE AUXILIARY SPRING Rack travel in mm : 2.00

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 78.0...88.0 1000 s: (75.0...91.0)

Rack travel in mm : 16.50...16.90

Remarks:

Observe VDT-I-420/120

Note remarks

: VAL 4,4 c Test sheet **Fdition** : 01.02.91

Replaces

Test oil : ISO-4113

Combination no. : 0 400 874 250

Injection pump

Pump designation : PES4A95D32ORS2807 : 0 410 894 994

EP type number Governor

Governor design. : RSV375...1125A2C2178

-7R

: 0 420 233 279 Governer no.

Customer-spec. information : VALMET Customer

Engine : 420 DS

: 75.0 1st version kW Rated speed : 2250

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Openina

: 172...175 pressure, bar

Test lines : 1 680 750 014

Outside diameter x Wall thickness

x Length mm : 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.50...2.60 Prestroke mm

: (2.45...2.65)

Rack travel in mm : 9.00...12.00

: 1- 2- 4- 3 Firing order

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8.50...9.50

& maximum rack tra: 21.00

Difference ° CS : 4.50...5.50

BASIC SETTING

1st speed rpm: 1125

Rack travel in mm : 11.20...11.30

Del.quantity cm3/: 8.6...8.8

100 s: (8.4...9.0)

cm3 : 0.3Spread

100 s: (0.6)

rpm : 375.0 2nd speed Rack travel in mm: 5.5...5.7

Del.quantity cm3/: 1.8...2.4

100 s: (1.5...2.6)

cm3 : 0.3 Spread 100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800 Speed

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1125 Speed

: 86.5...88.5 Del.quantity

1000 : (84.5...90.5)

: 3.50 cm3 Spread

1000 : (6.00)

RATED SPEED

1st version

Control lever position degrees: 97...105 Testina:

1st rack travel in: 10.20 rpm : 1165...1175 Speed 2nd rack travel in: 4.00

rpm : 1235...1265 Speed

3rd rack travel in: 4.00

Speed rpm: 1245...1275 4th rack travel in: 1410

rpm : 0.30...1.40 Speed

LOW IDLE 1 Control lever

position degrees: 71...79 Setting point w/out bumper spring

rpm Speed Rack travel in mm: 5.1

Testing:

rpm : 100 Speed Minimum rack trave: 19.50 rpm : 375 Speed

Rack travel in mm : 5.50...5.70

Rack travel in mm : 2.00

rpm : 465...525 Speed

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1125

Rack travel in m: 11.20...11.30

2nd speed rpm : 500

Rack travel in m: 11.70...11.80

4th speed rpm : 965

Rack travel in m: 11.40...11.60

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm ; 750

Del.quantity cm3/: 86.5...89.5

1000 s: (84.0...92.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 10.20

rpm : 1165...1175 Speed

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 200.0...210.0 1000 s: (197.0...213.0)

Rack travel in mm : 19.50...21.00

LOW IDLE

Speed rpm : 375 Rack travel in mm : 5.50...5.70 Del.quantity cm3/: 18.0...24.0

1000 s: (15.5...26.5)

cm3 : 3.50Spread

1000 s: (5.00)

Remarks:

APPLICATION

Tractor (tractor engines)

B16

Note remarks

Test sheet : KHD 1 g 49 : 01.02.91 Edition

Replaces

Test oil : ISO-4113

Combination no. : 0 400 874 251

Injection pump

Pump designation : PES4A85D410RS2732-1

EP type number : 0 410 884 943

Governor

Governor design. : RSV325...1175A8C2223

-2L

: 0 420 232 484 Governer no.

Customer-spec. information

Customer : KHD

Engine : F4L913

: 56.0 : 2350 1st version kW Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Opening .

pressure, bar : 172...175

Test Lines : 1 680 750 014

Outside diameter x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.50...2.60

: (2.45...2.65)

Rack travel in mm : 9.00...12.00

: 1-3-4-2 Firing order

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm: 1175

Rack travel in mm : 9.90...10.00

Del.quantity cm3/: 6.8...6.9

100 s: (6.6...7.1)

cm3 : 0.3Spread

100 s: (0.4)

2nd speed rpm : 325.0 Rack travel in mm : 5.9...6.1

Del.quantity cm3/: 0.8...1.4

100 s: (0.6...1.6)

cm3 : 0.2Spread 100 s: (0.4)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800 Speed Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 5.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1175 Speed

: 68.0...69.0 Del.quantity 1000 : (66.0...71.0)

: 3.00 Spread cm3

: (4,50) 1000

RATED SPEED

1st version

Control lever

position degrees: 102...110

Testing:

1st rack travel in: 8.90

rpm : 1215...1225 Speed

2nd rack travel in: 4.00

Speed rpm : 1245...1275

3rd rack travel in: 4.00

Speed rpm : 1250...1280 4th rack travel in: 1425

Speed rpm : 0.30...1.40

LOW 1DLE 1 Control lever

position degrees: 66...74 Setting point w/out bumper spring

rpm : 325 Speed Rack travel in mm: 5.6

Testing:

Speed rpm : 100Minimum rack trave: 19.50

Speed rpm : 325
Rack travel in mm : 5.90...6.10
Rack travel in mm : 2.00 : 450...510 Speed rom

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1175

Rack travel in m: 9.90...10.00

rpm : 500 2nd speed

Rack travel in m: 10.50...10.60

4th speed rpm : 820

Rack travel in m: 10.10...10.30

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 800

Del.quantity cm3/: 61.0...63.0 1000 s: (58.5...65.5)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 8.90

Speed rpm : 1215...1225

STARTING FUEL DELIVERY

: 100 Speed rpm

Del.quantity cm3/: 115.0...125.0

1000 s: (112.0...128.0)

Rack travel in mm : 17.10...17.30

Remarks:

: RENAULT

APPLICATION

Tractor (tractor engines)

Note remarks

Test sheet : VAL 6,6 b Edition : 25.01.91

Replaces

Test oil : ISO-4113

Combination no. : 0 400 876 384

Injection pump

Pump designation : PES6A95D32ORS28O6 EP type number : 0 410 896 898

Governor

: RSV375...1125A0C2178 Governor design.

-88

: 0 420 233 280 Governer no.

Customer-spec. information Customer : VALMET

: 620D Engine

1st version kW : 88.0 : 2250 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter x Wall thickness

x Length mm : 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.50...2.60 Prestroke mm : (2.45...2.65) Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8.50...9.50

& maximum rack tra: 21.00

Difference ° CS : 4.50...5.50

BASIC SETTING

1st speed rpm: 1125

Rack travel in mm : 8.50...8.60

Del.quantity cm3/: 6.7...6.9

100 s: (6.5...7.1)

Spread cm3 : 0.3

100 s: (0.6)

rpm : 375.02nd speed Rack travel in mm: 5.4...5.6

Del.quantity cm3/: 2.1...2.9 100 s: (1.9...3.2)

cm3 : 0.3Spread 100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3 rpm : 800 Speed

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 5.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1125

Del.quantity : 67.5...69.5

1000 : (65.5...71.5) cm3 : 3.50

Spread

1000 : (6.00)

RATED SPEED

1st version

Control lever position degrees: 91...99 Testing: 1st rack travel in: 7.50 Speed rpm : 1165...1175 2nd rack travel in: 4.00 rpm : 1210...1240 Speed 3rd rack travel in: 4.00 rpm : 1215...1245 Speed 4th rack travel in: 1380 Speed rpm : 0.30...1.40 LOW IDLE 1 Control lever position degrees: 71...79 Setting point w/out bumper spring Speed rom : 375 Rack travel in mm: 5.0 Testing: Speed : 100 rom Minimum rack trave: 19.50 Speed rpm : 375 Rack travel in mm : 5.40...5.60 Rack travel in mm : 2.00 Speed rpm : 470...530 TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1125 Rack travel in m: 8.50...8.60 2nd speed rpm : 500 Rack travel in m: 10.10...10.20 4th speed rpm : 825 Rack travel in m: 9.40...9.60 FUEL DELIVERY CHARACTERISTICS 1st version rpm : 500 Speed Del.quantity cm3/: 65.0...68.0 1000 s: (62.5...70.5) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 7.50 rpm : 1165...1175 Speed

Rack travel in mm : 19.50...21.00

LOW IDLE

Speed rpm : 375 Rack travel in mm : 5.40...5.60 Del.quantity cm3/: 21.5...29.5 1000 s: (19.0...32.0) Spread cm3: 3.50

1000 s: (5.50)

Remarks:

APPLICATION

Tractor (tractor engines)

Speed

STARTING FUEL DELIVERY

LIDW Del.quantity cm3/: 195.0...205.0

: 100

1000 s: (192.0...208.0)

Note remarks

Test sheet Edition

: KHD 1 q 50 : 01.02.91

Replaces

Test oil

: ISO-4113

Combination no.

: 0 400 876 387

Injection pump

EP type number

Pump designation : PES6A95D410RS2625 : 0 410 896 926

Governor

Governor design.

: RSV375...1200A5C2253

-4L

Governer no.

: 0 420 232 560

Customer-spec. information

Customer

: KHD

Engine

: BF6L913B

1st version kW

Rated speed

: 125.0 : 2400

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C

: 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.50

Test nozzle holder

assembly

: 0 681 343 009

Opening.

pressure, bar

: 172...175

Test lines

: 1 680 750 014

Outside diameter

x Wall thickness

x Length mm

: 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm

: 1.90...2.00

: (1.85...2.05)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing

: 0-60-120-180-240-300

Tolerance + - °

: 0.50 (0.75)

BASIC SETTING

1st speed

rpm: 1200

Rack travel in mm : 11.10...11.20

Del.quantity cm3/: 8.5...8.6

100 s: (8.3...8.8)

Spread

Spread

Speed

cm3 : 0.3

100 s: (0.6)

rpm : 375.0 2nd speed

Rack travel in mm : 6.0...6.2 Del.quantity cm3/: 1.1...1.7

100 s: (0.8...1.9)

cm3 : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3 rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 3.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1200 Speed Aneroid pressure h: 800

Del.quantity : 85.5...88.5)

: 3.50 Spread cm3

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 95...103

Testing:

1st rack travel in: 10.10

rpm : 1240...1250 Speed

2nd rack travel in: 4.00

rpm : 1260...1290 Speed

3rd rack travel in: 4.00 rpm : 1280...1310 Speed 4th rack travel in: 1440 rom : 0.30...1.40Speed LOW IDLE 1 Control lever position degrees: 64...72 Setting point w/out bumper spring Speed rpm : 375 Rack travel in mm : 5.5 Testina: rpm : 100 Speed Minimum rack trave: 19.50 rpm : 375 Rack travel in mm : 5.40...5.70 Rack travel in mm : 2.00 rpm : 435...495 Speed TORQUE CONTROL Torque control curve - 1st version rpm : 1200 1st speed Rack travel in m: 11.10...11.20 2nd speed rpm : 500 Rack travel in m: 12.10...12.20 4th speed rpm : 1030 Rack travel in m: 10.40...10.60 Aneroid/Altitude

Compensator Test

1st version Setting

Speed rpm : 500 Pressure hPa : 800

Rack travel mm : 12.10...12.20

Measurement

 $1/\min : 500$ Speed

1st pressure hPa : 100

Rack travel in m: 10.60...10.70

2nd pressure hPa : 350

Rack travel in m: 11.60...11.70 3rd pressure hPa : 280

Rack travel in m: 11.00...11.30

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 800 rpm : 800 Speed

Del.quantity cm3/: 89.0...91.0 1000 s: (86.5...93.5)

Aneroid pressure h: 100

Speed rom : 500 Del.quantity cm3/: 55.0...57.0

1000 s: (53.0...59.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 10.10

Speed rpm : 1240...1250

STARTING FUEL DELIVERY

rpm : 100

Del.quantity cm3/: 120.0...130.0

:

1000 s: (117.0...133.0) Rack travel in mm : 17.60...18.00

Remarks:

APPLICATION

Tractor (tractor engines)

Note remarks

Test sheet : MB 6,0 j 2 Edition : 01.02.91

Replaces

Test oil : ISO-4113

Combination no. : 0 400 876 389

Injection pump

Pump designation : PES6A95D41ORS2797 EP type number : 0 410 896 900

Governor

: RSV350...1200A1C1163 Governor design.

-2L

: 0 420 232 562 Governer no.

Customer-spec. information

Customer : MERCEDES-BENZ

: OM 366 Engine

: 75.0 1st version kW : 2400 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Opening

: 172...175 pressure, bar

Test Lines : 1 680 750 015

Outside diameter x Wall thickness

: 6.00X1.50X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.20...3.30

: (3.15...3.35)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

: 0.50 (0.75) Tolerance + - °

BASIC SETTING

1st speed rpm: 1200

Rack travel in mm : 9.00...9.10

Del.quantity cm3/: 4.8...5.0

100 s: (4.6...5.2)

cm3 : 0.3Spread

100 s: (0.6)

rpm : 350.0 2nd speed Rack travel in mm : 9.4...10.0 Del.quantity cm3/: 0.8...1.4

100 s: (0.5...1.6)

cm3 : 0.3Spread

100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800 Speed

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 5.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 120G Speed

Del.quantity : 48.5...50.5 1000 : (46.5...52.5)

: 3.50 Spread cm3

: (6.00) 1000

RATED SPEED

1st version

Control lever

position degrees: 108...116

Testing:

1st rack travel in: 8.00

Speed rpm : 1240...1245

2nd rack travel in: 4.00

rpm : 1263...1280 Speed

3rd rack travel in: 4.00

rpm : 1315...1345 Speed 4th rack travel in: 1450 rpm : 0.30...1.40 Speed 5th rack travel in: 1270...1280 Speed rpm : 8.00 LOW IDLE 1 Control lever position degrees: -3 Setting point w/out bumper spring : 350 rpm Rack travel in mm: 9.70 Testing: rpm : 100 Speed Minimum rack trave: 19.50 Speed rpm : 350 Rack travel in mm : 9.40...10.00 Rack travel in mm: 2.00 rpm : 540...600 Speed TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1200 Rack travel in m: 9.00...9.10 2nd speed rpm : 500 Rack travel in m: 10.00...10.20 3rd speed rpm : 875 Tack travel in m: 9.50...9.70 FUEL DELIVERY CHARACTERISTICS 1st version Speed : 500 rom Del.quantity cm3/: 35.0...38.0 1000 s: (32.5...40.5) STARTING FUEL DELIVERY rpm : 100 Speed Del.quantity cm3/: 78.0...88.0 1000 s: (75.0...91.0) Rack travel in mm: 15.40...15.80 Remarks: Adjust shutoff device to 0.5...1.5 mm. APPLICATION Unimog

Note remarks

Test sheet : RAB 10.8 a1 Edition : 01.02.91

Replaces : -

Test oil : ISO-4113

Combination no. : 0 401 276 051

Injection pump

Pump designation : PES6A100D410RS3039

EP type number : 0 411 206 018

Governor

Governor design. : RSV475...950A1C2121L

Governer no. : 0 420 232 384

Customer—spec. information Customer : RABA

Engine : D2156 MKTL6

1st version k₩ : 184.0 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Opening |

pressure, bar : 172...175

Test Lines : 1 680 750 014

Outside diameter x Wall thickness

x Length mm : 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 1.60...1.70 : (1.55...1.75)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance $+ - ^{\circ} : 0.50 (0.75)$

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 950

Rack travel in mm : 13.60...13.70

Del.quantity cm3/: 15.2...15.4

100 s: (15.0...15.6)

Spread cm3:0.3

100 s: (0.6)

2nd speed rpm : 475.0 Rack travel in mm : 5.9...6.1 Del.quantity cm3/ : 1.1...1.5

100 s: (0.9...1.8)

Spread cm3 : 0.3 100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

rlever position Degree: -3

Speed rpm: 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension Click setting x : 3.75

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 950

Aneroid pressure h: 750

Del.quantity : 152.0...154.0 1000 : (150.0...156.0)

Spread cm3 : 3.00

1000 : (6.00)

RATED SPEED

1st version Control lever

position degrees: 95...103

Testing:

1st rack travel in: 12.60 Speed rpm : 990...1000

2nd rack travel in: 4.00

rpm : 1025...1055 Speed 3rd rack travel in: 4.00 rpm : 1030...1060 Speed 4th rack travel in: 1195 rpm : 0.30...1.40Speed LOW IDLE 1 Control lever position degrees: 73...81 Setting point w/out bumper spring : 475 rom Rack travel in mm: 5.5 Testina: : 100 Speed rpm Minimum rack trave: 19.50 rpm : 475 Rack travel in mm : 5.90...6.10 Rack travel in mm: 2.00 rpm : 570...630 Speed : 675 Speed riom Maximum rack trave: 1.00 TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 950 Rack travel in m: 13.60...13.70 ad speed rpm : 500 2nd speed Rack travel in m: 15.70...15.80 3rd speed rpm : 840 Rack travel in m: 14.90...15.10 Aneroid/Altitude Compensator Test 1st version Settina rpm : 500 hPa : 750 Speed ron Pressure Rack travel mm : 15.70...15.80 Measurement 1/min: 500 Speed 1st pressure hPa :-Rack travel in m: 13.40...13.50 2nd pressure hPa : 550 Rack travel in m: 15.10...15.20 3rd pressure hPa : 420 Rack travel in m: 14.00...14.20 FUEL DELIVERY CHARACTERISTICS

Aneroid pressure h: -Speed rpm: 500 Del.quantity cm3/: 0.0...149.0 1000 s: (0.0...151.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 12.60 rpm : 990...1000 Speed Remarks: : **APPLICATION** Tractor (tractor engines)

1st version

Aneroid pressure h: 750

Speed rpm : 750 Del.quantity cm3/: 180.0...184.0

1000 s: (178.0...186.0)

Note remarks

: STE 12.0 h Test sheet : 01.02.91 Edition : 30.11.90 Replaces : ISO-4113 Test oil

: 0 401 838 709 Combination no.

Injection pump

Pump designation : PE8P110A120LS3271 EP type number : 0 411 818 723

Governor

Governor design. : RQV250...1100PA951-2 Governer no. : 0 421 813 908

Customer-spec. information : SNF Customer

Engine : WD815.66

: 270.0 1st version kW Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press. bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Openina

: 172...175 pressure, bar

Test lines : 1 680 750 015

Outside diameter x Wall thickness

x Length mm : 6.00x1.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.80...2.90 Prestroke mm

: (2.75...2.95)

Rack travel in mm : 9.00...12.00

: 1- 5- 4- 8- 6- 3-Firing order

: 0-45-90-135-180-225-Phasina

270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 13.40...13.50

Del.quantity cm3/: 17.4...17.6

100 s: (17.1...17.9)

Spread cm3 : 0.4

100 s: (0.7)

rpm : 250.0 2nd speed Rack travel in mm: 4.1...4.3 Del.quantity cm3/: 1.7...2.3

100 s: (1.5...2.5)

cm3 : 0.4Spread 100 s: (0.7)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 250 1st speed : 0.90...1.30 travel mm

rpm : 485 2nd speed travel mm : 3.20...3.80

3rd speed rpm : 640

travel mm : 4.20...4.80

4th speed rpm : 1145

: 8.40...8.60 travel mm

rpm : 1220 5th speed

travel mm : 9.80...10.20

GUIDE SLEEVE POSITION

Control-lever position Degree: -1

rpm : 1130 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1100Speed Aneroid pressure h: 1200

Del.quantity : 174.0....79.0)

cm3 : 4.00 1000 : (7.50) Spread

RATED SPEED

1st version Control lever

position degrees: 114...122

Testina:

1st rack travel in: 12.40

rpm : 1140...1150 Speed

2nd rack travel in: 4.00

Speed rpm : 1210...1240 4th rack travel in: 1350

Speed rpm : 0.00...1.00

LOW IDLE 1 Control lever

position degrees: ?

Testing:

rpm : 100 Speed Minimum rack trave: 4.60 rpm : 250 Speed

Rack travel in mm : 4.10...4.30

CONSTANT REGULATION

rpm : 250...390 Speed

TORQUE CONTROL

Dimension a mm : -

Torque control curve - 1st version

1st speed rpm : 1100

Rack travel in m: 13.40...13.50

2nd speed rpm : 600

Rack travel in m: 13.40...13.60

Aneroid/Altitude Compensator Test

1st version

Setting

Speed : 500 rpm hPa : 1200 Pressure

: 13.40...13.50 Rack travel mm

Measurement

Speed $1/\min : 500$

1st pressure hPa :-

Rack travel in m: 9.90...10.10

2nd pressure hPa : 600

Rack travel in m: 12.50...12.60 3rd pressure hPa : 380

Rack travel in m: 10.80...11.00

START CUT-OUT

1/min: 170 (190) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200

Speed rpm : 600

Del.quantity cm3/: 186.0...190.0 1000 s: (183.0...193.0)

Aneroid pressure h: -

Speed rpm : 500 Del.quantity cm3/: 117.0...119.0 1000 s: (114.0...122.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 12.40

rpm : 1140...1150 Speed

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 220.0...260.0 1000 s: (216.0...264.0) Rack travel in mm: 20.00...21.00

Remarks:

Delivery-valve spring pre-tension =

2.40...2.60 mm.

Permissible alteration from 2.20...2.90

Note remarks

: STE 12.0 i : 01.02.91 Test sheet Edition

Replaces

: ISO-4113 Test oil

Combination no. : 0 401 838 710

Injection pump

Pump designation : PE8P110A120LS3271 EP type number : 0 411 818 723

Governor

Governor design: RQ300/1100PA958-2

: 0 421 801 570 Governer no.

Customer-spec. information Customer : SNF

: WD815.66 Engine

1st version kW : 270.0 : 2200 Rated speed

TEST BENCH REQUIREMENTS

Test oil

: 38...42 inlet temp. °C

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

: 1 680 750 015 Test lines

Outside diameter x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.80...2.90 Prestroke mm

: (2.75...2.95)

Rack travel in mm : 9.00...12.00

: 1- 5- 4- 8- 6- 3-7- 2 Firing order

Phasing : 0-45-90-135-180-225-

270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

rpm: 1100 1st speed

Rack travel in mm : 13.40...13.50

Del.quantity cm3/: 17.4...17.6

100 s: (17.1...17.9)

cm3 : 0.4Spread

100 s: (0.7)

rpm : 300.0 2nd speed Rack travel in mm: 4.1...4.3

Del.quantity cm3/: 1.7...2.3

100 s: (1.5...2.5) cm3 : 0.4Spread

100 s: (0.7)

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 600 Speed

Rack travel in mm : 15.60...16.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1100 Speed Aneroid pressure h: 1200

: 174.0...176.0 Del.quantity 1000 : (171.0...179.0)

cm3 : 4.00 Spread

1000 : (7.50)

RATED SPEED

1st version

Setting point:

Speed : 600 rpm Rack travel in mm : 16.0

Testing:

1st rack travel in: 12.40

Speed rpm : 1145...1160

2nd rack travel in: 4.00

rpm : 1200...1230 Speed 4th rack travel in: 1350

Speed rpm : 0.00...1.40

LOW IDLE 1

Setting point w/out bumper spring

rpm : 300° Speed Rack travel in mm: 4.2

Testina:

Speed rpm Minimum rack trave: 5.70 rpm : 300 Speed

Rack travel in mm : 4.10...4.30

Rack travel in mm: 2.00 : 340...380 Speed rom

TORQUE CONTROL

Dimension a mm

Torque control curve - 1st version

rpm : 1100 1st speed

Rack travel in m: 13.40...13.50

rpm : 600 2nd speed

Rack travel in m: 13.40...13.60

Aneroid/Altitude Compensator Test

1st version Setting

: 500 Speed rom Pressure hPa : 1200

Rack travel mm : 13.40...13.50

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 9.90...10.10

2nd pressure hPa : 600

Rack travel in m: 12.50...12.60 3rd pressure hPa : 380 Rack travel in m: 10.80...11.00

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200 rpm : 600

Del.quantity cm3/: 186.0...190.0

1000 s: (183.0...193.0)

Aneroid pressure h: -

rpm : 500 Speed

Del.quantity cm3/: 117.0...119.0

1000 s: (114.0...122.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.40

rpm : 1145...1160 Speed

STARTING FUEL DELIVERY

: 100 Speed rpm

Del.quantity cm3/: 220.0...260.0 1000 s: (216.0...264.0) Rack travel in mm: 20.00...21.00

Remarks:

Delivery-valve spring pre-tension = 2.40...2.60 mm.

Permissible alteration from 2.20...2.90

Note remarks

: PEN 7,0 k 1 : 11.02.91 : 14.9.90 Test sheet Edition Replaces : ISO-4113 Test oil

Combination no. : 0 401 846 455

Injection pump

Pump designation : PE6P110A320RS367Y EP type number : 0 411 816 132

Governor

Governor design. : RQV250...1000PA394

: 0 421 813 241 Governer no.

Customer-spec. information

: VOLVO-PENTA Customer

Engine : TMD 70 C

: 154.5 1st version kW : 2000 Rated speed

TEST BENCH REQUIREMENTS

Test oil

: 38...42 inlet temp. °C

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening |

: 172...175 pressure, bar

: 1 680 750 004 Test lines

Outside diameter x Wall thickness

: 6.00x1.50x600 x Lenath mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values _

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 3.00...3.10 Prestroke mm

: (2.95...3,15)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

: 0.50 (0.75) Tolerance + - °

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 900

Rack travel in mm : 9.70...9.80

Del.quantity cm3/: 8.5...8.7

100 s: (8.2...9.0)

Spread cm3 : 0.4

100 s: (0.8)

rpm : 250.0 2nd speed Rack travel in mm: 4.9...5.1 Del.quantity cm3/: 1.6...2.0 100 s: (1.3...2.2)

Spread cm3 : 0.3100 s: (0.6)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250

: 1.10...1.20 travel mm rpm : 400 2nd speed

: 2.70...2.90 travel mm : 650

3rd speed rpm travel mm

: 4.70...4.90 : 1050

4th speed rpm : 8.40...8.50 travel mm

: 1150 5th speed rpm

: 9.70...9.90 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1050 Speed Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 900 Aneroid pressure h: 700

Del.quantity : 83.0...90.0)

cm3 : 4.00 1000 : (8.00) Spread RATED SPEED

1st version Control lever position degrees: 61...69

Testing: 1st rack travel in: 8.70 Speed rpm : 1050...1060 2nd rack travel in: 4.00 rpm : 1110...1140 Speed

4th rack travel in: 1250 Speed rpm : 0.00...1.00

LOW IDLE 1 Control lever position degrees: 8...16 Setting point w/out bumper spring : 250 rom Rack travel in mm: 4.8

Testina: Speed : 100 rpm Minimum rack trave: 6.50 rpm : 250 Rack travel in mm : 4.70...4.90

Rack travel in mm : 2.00 rpm : 350...410 Speed

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 8.70 rpm : 1050...1060 Speed

STARTING FUEL DELIVERY

: 100 Speed rpm Del.quantity cm3/: 165.0...200.0 1000 s: (161.0...204.0)

LOW IDLE

rpm : 250 Rack travel in mm : 4.90...5.10 Del.quantity cm3/: 16.0...20.0 1000 s: (13.5...22.5) Spread cm3: 3.00

1000 s: (6.00)

Remarks:

Delivery-valve spring pre-tension =

2.40...2.60 mm.

Permissible alteration from 2.20...2.90

APPLICATION

Navy

CO4

Note remarks

Test sheet : ENA 10,1 e : 16.01.91 Edition Replaces : 13.12.89

Test oil : ISO-4113

Combination no. : 0 401 846 552

Injection pump

Pump designation : PE6P100A820LS503 : 0 411 806 197 EP type number

Governor

Governor design. : RQ250/1000PA352-1 : 0 421 801 412 Governer no.

Customer-spec. information Customer : ENASA

: 95 T1 AZ Engine

1st version kW : 155.0 : 2000 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening .

: 172...175 pressure, bar

Test lines : 1 680 750 015

Outside diameter x Wall thickness

x Length Im : 6.00x1.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90 : (2.85...2.95) Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance $+ - \circ : 0.50 (0.75)$

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 980

Rack travel in mm: 13.70...13.80

Del.guantity cm3/: 15.5...15.7

100 s: (15.3...15.9)

Spread cm3 : 0.4

100 s: (0.7)

rpm : 250.0 2nd speed Rack travel in mm: 7.8...8.0 Del.quantity cm3/: 1.8...2.2 100 s: (1.5...2.4)

cm3 : 0.4Spread 100 s: (0.6)

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 600 Speed

Rack travel in mm : 16.00...17.20

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 980 Aneroid pressure h: 900

: 155.0...157.0 Del.quantity 1000 : (153.0...159.0)

cm3 : 4.50 1000 : (7.00) Spread

RATED SPEED

1st version

Setting point:

Speed rpm : 600 Rack travel in mm: 16.6

Testing:

1st rack travel in: 12.70

rpm : 1045...1060 Speed 2nd rack travel in: 4.00

rpm : 1100...1130 Speed

4th rack travel in: 1200

rpm : 0.00...1.50 Speed

LOW TDIF 1

Setting point w/out bumper spring

Speed rpm : 250 Rack travel in mm: 6.0

Testing:

: 100 Speed rpm Minimum rack trave: 7.50 rom : 250 Speed

Rack travel in mm: 5.90...6.10
Rack travel in mm: 2.00
Speed rpm: 350...390

TORQUE CONTROL

Dimension a mm : 0.40

Torque control curve - 1st version

1st speed rpm : 980

Rack travel in m: 13.70...13.80

rpm : 700 2nd speed

Rack travel in m: 14.40...14.80

3rd speed rpm : 825

Rack travel in m: 13.90...14.30

Aneroid/Altitude Compensator Test

1st version

Setting

: 500 Speed rpm Pressure hPa : 900

: 14.10...14.30 Rack travel mm

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 12.90...13.30

2nd pressure hPa : 400

Rack travel in m: 14.10...14.20 3rd pressure hPa : 300 Rack travel in m: 13.40...13.60

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900 Speed rpm : 700

Del.quantity cm3/: 159.0...163.0

1000 s: (157.0...165.0)

Aneroid pressure h: -

Speed rpm : 500 Del.quantity cm3/: 130.0...132.0 1000 s: (127.0...135.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.70

rpm : 1045...1060 Speed

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 150.0...170.0 1000 s: (146.0...174.0)

LOW IDLE

rpm : 250 Speed

Rack travel in mm : 5.90...6.10

Remarks:

Check electrically unlatched starting

fuel delivery (EES) with 24 volt.

On activation of the starting solenoid, the start position must be reached.

Note remarks

Test sheet : DAF 11,7 m : 14.12.90 Edition : 17.9.90 Replaces Test oil : ISO-4113

Combination no. : 0 401 846 566

Injection pump

Pump designation: PE6P110A320RS526 : 0 411 816 178 EP type number

Governor

Governor design. : RQ275/1000PA818-3 Governer no. : 0 421 801 534

Customer-spec, information Customer : DAF

Engine : LT 160 G

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

: 172...175 pressure, bar

Test Lines : 1 680 750 015

Outside diameter x Wall thickness

: 6.00X1.50X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.80...2.90 Prestroke mm

: (2.75...2.95) Rack travel in mm : 13.00...14.00

Firing order : 1-5-3-6-2Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 4.90...5.10 & maximum rack tra: 13.0...14.0 Difference ° CS : 2.00...4.00

BASIC SETTING

1st speed rpm: 600

Rack travel in mm : 14.20...14.30

Del.quantity cm3/: 15.6...15.8

100 s: (15.3...16.0)

cm3 : 0.4Spread

100 s: (0.7)

2nd speed rpm : 300.0 Rack travel in mm : 7.4...7.8 Del.quantity cm3/ : 2.2...2.7

100 s: (1.9...2.9)

cm3 : 0.4Spread

100 s: (0.7)

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 600 Speed

Rack travel in mm : 15.20...16.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 600 Speed Aneroid pressure h: 700

: 156.0...158.0 Del.quantity

1000 : (153.5...160.5)

: 4.00 Spread cm3

1000 : (7.50)

RATED SPEED

1st version

Setting point:

speed rpm : 600 Rack travel in mm : 15.8

Testing:

1st rack travel in: 12.40

Speed rpm : 1030...1045 2nd rack travel in: 4.00

rpm : 1090...1120 Speed

4th rack travel in: 1250

rom : 0.00...1.00Speed

LOW IDLE 1

Setting point w/out bumper spring

rom Rack travel in mm: 7.1

Testina:

Speed rpm : 100 Minimum rack trave: 8.50 : 300 Speed rom

Rack travel in mm : 7.00...7.20

Rack travel in mm: 2.00

rpm : 380...420 Speed

TORQUE CONTROL

Dimension a mm : 0.40

Torque control curve - 1st version

1st speed rpm : 980

Rack travel in m: 13.40...13.60

rpm : 600 2nd speed

Rack travel in m: 14.40...14.60

rpm : 825 3rd speed

Rack travel in m: 13.60...13.80

Aneroid/Altitude Compensator Test

1st version Setting

: 600 Speed rom Pressure hPa : 700

Rack travel mm : 14.20...14.30

Measurement

 $1/\min : 600$ Speed

1st pressure hPa : -

Rack travel in m: 12.70...12.90

2nd pressure hPa : 290

Rack travel in m: 13.90...14.00

3rd pressure hPa : 260

Rack travel in m: 13.40...13.60

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700 rpm : 980

Del.quantity cm3/: 136.0...138.0 1000 s: (132.0...142.0)

Aneroid pressure h: -

rpm : 600 Speed

Del.quantity cm3/: 122.0...124.0 1000 s: (119.5...126.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.40

rpm : 1030...1045 Speed

STARTING FUEL DELIVERY

: 100 Speed rom

Del.quantity cm3/: 280.0...320.0 1000 s: (276.0...324.0)

Rack travel in mm : 19.50...21.00

LOW IDLE

rpm : 300 Speed

Rack travel in mm : 7.40...7.80 Del.quantity cm3/: 22.0...27.0 1000 s: (19.5...29.5)

cm3 : 4.50Spread

1000 s: (7.50)

Remarks:

Check electrically unlatched starting fuel delivery (EES) with 24 volt.

On activation of the starting solenoid, the start position must be reached.

Note remarks

: VOL 12,2 h1 Test sheet : 15.03.90 Edition

Replaces

: TSO-4113 Test oil

Combination no. : 0 401 846 827

Injection pump

Pump designation : PE6P120A320RS3178 : 0 411 826 752 EP type number

Governor

Governor design. : RQV250...950PA921-3

: 0 421 813 786 Governer no.

Customer-spec. information Customer : VOLVO

Engine : TD122F

1st version kW : 257.0 : 1900 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Openina

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

: 1 680 750 067 Test lines

Outside diameter x Wall thickness

: 6.00X1.50X1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 3.60...3.70 Prestroke mm

: (3.55...3.75)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

Phasina · 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rom : 700

Rack travel in mm : 13.00...13.10

Del.quantity cm3/: 22.9...23.1

100 s: (22.6...23.4)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 250.0 Rack travel in mm : 4.6...4.8 Del.quantity cm3/: 1.7...2.2

100 s: (1.4...2.5)

cm3 : 0.5 Spread 100 s: (0.7)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250

: 1.00...1.40 travel mm

rpm : 450 2nd speed

: 3.60...4.20 travel mm

rpm : 700 3rd speed

: 6.40...6.60 travel mm

rpm : 985 4th speed

: 8.20...8.40 travel mm

rpm : 1060 5th speed

: 9.60...10.00 travel mm

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1 rpm : 1000 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700 Aneroid pressure h: 900 Del.quantity : 229.0...234.0)

cm3 : 5.00 Spread 1000 : (9.00)

RATED SPEED

1st version Control Lever

position degrees: 116...124

Testing:

1st rack travel in: 12.00 rpm : 980...990 Speed

2nd rack travel in: 4.00

rpm : 1060...1090

4th rack travel in: 1200

rpm : 0.00...1.00Speed

LOW IDLE 1 Control Lever

position degrees: 60...68

Testing:

Speed rpm : 100 Minimum rack trave: 6.20 rpm : 250

Rack travel in mm : 4.60...4.80

CONSTANT REGULATION

rpm : 250...380 Speed

Aneroid/Altitude Compensator Test

1st version Setting

Speed : 500 rpm hPa : 900 Pressure

Rack travel mm : 13.00...13.10

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 10.00...10.20

2nd pressure hPa : 120

Rack travel in m: 10.20...10.30

3rd pressure hPa : 620

Rack travel in m: 12.50...12.70

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: rpm_ : 700 Speed

Del.quantity cm3/: 163.0...165.0

1000 s: (160.0...168.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 12.00 rpm : 980...990 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/: 270.0...310.0 1000 s: (266.0...314.0)

Rack travel in mm : 20.00...21.00

LOW IDLE

rpm : 250 Speed

Rack travel in mm : 4.60...4.80

Del.quantity cm3/: 17.5...22.5 1000 s: (14.5...25.5)

cm3 : 5.00Spread 1000 s: (7.00)

Remarks:

Delivery-valve spring pre-tension = 2.40...2.60 mm.

Permissible alteration from 2.20...2.90

Note remarks

Test sheet : MB 11,0 x : 18.01.91 Edition : 5.11.90 Replaces Test oil : ISO-4113

: 0 401 846 910 Combination no.

Injection pump

Pump designation : PE6P110A320LS3851 : 0 411 816 765 EP type number

Governor

Governor design. : RQ300/1050PA187-26 : 0 421 801 489 Governer no.

Customer-spec. information

Customer : MERCEDES-BENZ

: OM/441 Engine

: 160.0 1st version kW : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 101 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0.6

Test lines : 1 680 750 008

Outside diameter

x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.40...4.50

: (4.35...4.55) Rack travel in mm : 9.00...12.00

: 6-3-5-2-4-1 Firing order

Phasing : 0-60-120-180-240-300

: 0.50 (0.75) Tolerance + - °

Time to cyl. no. : 6

BASIC SETTING

rpm: 1050 1st speed

Rack travel in mm : 11.20...11.30

Del.quantity cm3/: 12.2...12.4

100 s: (11.9...12.6)

cm3 : 0.8Spread

100 s: (1.3)

rpm : 300.02nd speed Rack travel in mm: 6.4...7.0 Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.4)

cm3 : 0.6Spread

100 s: (1.1)

GUIDE SLEEVE POSITION Control-Lever position

Degree: -1

Speed rpm: 650
Rack travel in mm: 13.10...13.90

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

: 122.0...124.0 : (119.5...126.5) Del.quantity 1000

Em3 : 8.50 Spread 1000 : (13.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 650 Rack travel in mm: 13.5

Testing: 1st rack travel in: 10.20 rpm : 1090...1100 2nd rack travel in: 4.00 Speed rpm : 1175...1205 4th rack travel in: 1300 rpm : 0.00...2.00 Speed LOW IDLE 1 Setting point w/out bumper spring rpm : 300 Speed Rack travel in mm : 6.7 Testina: rpm : 200 Speed Minimum rack trave: 8.50 rpm : 300 Speed Rack travel in mm : 6.40...7.00 Rack travel in mm : 2.00 rpm : 390...430 Speed FUEL DELIVERY CHARACTERISTICS 1st version rpm : 600 Speed Del.quantity cm3/: 119.0...125.0 1000 s: (119.0...125.0) cm3 : 11.00 1000 s: (14.0) Spread BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 10.20 Speed rpm : 1090...1100 STARTING FUEL DELIVERY : 100 Speed rpm Del.quantity cm3/: 130.0...150.0 1000 s: (126.0...154.0) Remarks:

Note remarks

: MB 11,0 w : 25.01.91 Test sheet Edition : 15.11.90 Replaces Test oil : ISO-4113

Combination no. : 0 401 846 918

Injection pump

Pump designation : PE6P110A320LS3851 EP type number : 0 411 816 765

Governor

Governor design. : RQV300...1050PA884-6

: 0 421 813 832 Governer no.

Customer-spec. information

Customer : MERCEEDES-BENZ

Engine : 0M441

: 160.0 1st version kW : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 101 assembly

Openina

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter

x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 4.40...4.50 Prestroke mm

: (4.35...4.55)

Rack travel in mm : 9.00...12.00

Firing order : 6-3-5-2-4-1

: 0-60-120-180-240-300 Phasing

Tolerance $+ - ^{\circ} : 0.50 (0.75)$

Time to cyl. no. : 6

BASIC SETTING

rpm: 1050 1st speed

Rack travel in mm : 11.20...11.30

Del.quantity cm3/: 12.2...12.4

100 s: (11.9...12.6)

cm3 : 0.8Spread

100 s: (1.3)

2nd speed rpm : 300.0Rack travel in mm: 6.3...6.9

Del.quantity cm3/: 1.6...2.2 100 s: (1.3...2.4)

cm3 : 0.6Spread

100 s: (1.1)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 3001st speed

: 0.50...1.00 travel mm

rpm : 460 2nd speed

: 2.70...3.20 travel mm

rpm : 738 3rd speed

: 4.60...5.10 travel mm

rpm : 1107 4th speed

: 7.90...8.40 rpm : 1370 travel mm

5th speed

: 11.00...12.00 travel mm

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1 rpm : 1050 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version rpm : 1050 Speed : 122.0...124.0 Del.quantity 1000 : (119.5...126.5) : 8.50 Spread cm3: (13.00) 1000 RATED SPEED 1st version Control lever position degrees: 116...124 Testina: 1st rack travel in: 10.20 rpm : 1090...1100 Speed 2nd rack travel in: 4.00 rpm : 1170...1200 Speed 4th rack travel in: 1350 Speed rpm : 0.00...1.00LOW IDLE 1 Control Lever position degrees: 83...91 Testing: rpm : 200 Speed Minimum rack trave: 8.50 : 300 Speed rpm -Rack travel in mm : 6.40...7.00 CONSTANT REGULATION rpm : 300...500 Speed START CUT-OUT 1/min: 220 (240) Speed FUEL DELIVERY CHARACTERISTICS 1st version : 600 Speed rom Del.quantity cm3/: 119.0...125.0 1000 s: (116.0...128.0) cm3 : 11.00 Spread 1000 s: (14.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 10.20 rpm : 1090...1100 Speed

Speed rpm : 100 Del.quantity cm3/ : 130.0...150.0 1000 s: (126.0...154.0)

Remarks:

STARTING FUEL DELIVERY

: 3.80...3.90 : (3.75...3.95) BOSCH INJ. PUMP TEST SPECIFICATIONS Prestroke mm Rack travel in mm : 9.00...12.00 Note remarks Firing order : 1-5-3-6-2-4 : ENA 11,9 e1 Test sheet Edition : 16.01.91 : 14.9.90 : 1s0-4113 Replaces Phasing : 0-60-120-180-240-300 Test oil Combination no. : 0 401 846 922 Tolerance + - ° : 0.50 (0.75) Injection pump Time to cyl. no. : 1 Pump designation : PE6P12OA32ORS3176-3 EP type number : 0 411 826 793 BASIC SETTING Governor Governor design. : RQV250...1050PA808 1st speed rpm: 650 : 0 421 813 553 Governer no. Rack travel in mm : 12.80...12.90 Customer-spec. information Del.guantity cm3/: 19.6...19.8 Customer : ENASA 100 s: (19.3...20.1) : 96 R1 CX Engine : 220.0 cm3 : 0.51st version kW Spread Rated speed : 2100 100 s: (0.9) TEST BENCH REQUIREMENTS rpm : 250.0 2nd speed Rack travel in mm: 6.4...6.7 Test oil Del.quantity cm3/: 1.1...1.7 100 s: (0.8...2.0) inlet temp. °C : 38...42 Overflow valve cm3 : 0.7 Spread : 1 417 413 025 100 s: (1.1) (B) Setting of injection pump Inlet press., bar: 1.50 with governor Test nozzle holder assembly : 1 688 901 019 GUIDE SLEEVE TRAVEL rpm : 250 : 1.00...1.40 1st speed Opening travel mm : 207...210 2nd speed rpm : 350 pressure, bar travel mm : 1.90...2.50 Orifice plate 3rd speed rpm : 700 : 4.50...5.10 diameter mm : 0,8 travel mm : 1095 4th speed rpm : 8.00...8.20 travel mm Test lines : 1 680 750 067 5th speed rpm : 1185 : 9.00...9.40 travel mm Outside diameter x Wall thickness GUIDE SLEEVE POSITION : 6.00x1.50x1000 Control-lever position x Length mm Degree: -1 rpm : 1110 (A) Injection pump setting values Speed Insp. values in parentheses Rack travel in mm : 15.20...17.80 Set equal delivery quant. FULL LOAD DELIV. AT FULL LOAD STOP per values

1st version

Aneroid pressure h: 900

rpm : 650

Speed

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Del.quantity : 196.0...198.0 1000 : (193.0...201.0)

cm3 : 5.00 1000 : (9.00) Spread

RATED SPEED

1st version Control lever

position degrees: 116...124

Testina:

1st rack travel in: 11.80

Speed rpm : 1090...1100 2nd rack travel in: 4.00

rpm : 1185...1215 Speed

4th rack travel in: 1300

Speed rom : 0.00...1.00

LOW IDLE 1 Control Lever

position degrees: 80...88

Testing:

rpm : 100 Speed Minimum rack trave: 8.00

rpm : 250 Rack travel in mm : 6.40...6.60

CONSTANT REGULATION

rom : 250...500 Speed

Aneroid/Altitude Compensator Test

1st version

Settina

: 500 Speed mqn. hPa : 900 Pressure

Rack travel mm : 12.80...12.90

Measurement

1/min : 500Speed

1st pressure hPa : -

Rack travel in m: 10.00...10.40

2nd pressure hPa : 500

Rack travel in m: 12.30...12.40

3rd pressure hPa : 270

Rack travel in m: 10.90...11.20

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900

Speed rpm : 1030 Del.quantity cm3/: 208.0...214.0

1000 s: (205.0...217.0)

Aneroid pressure h: -

rpm : 500 Speed Del.quantity cm3/: 130.0...132.0

1000 s: (127.0...135.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.80

rpm : 1090...1100 Speed

STARTING FUEL DELIVERY

rpm : 100

Del.quantity cm3/: 115.0...135.0 1000 s: (111.0...139.0)

Rack travel in mm : 19.50...21.00

LOW IDLE

rpm : 250 Speed

Rack travel in mm : 6.40...6.60

Remarks:

Delivery-valve spring pre-tension 3.2...3.4 mm.

Permissible alteration of 3.0...3.5 mm

Check electrically unlatched starting fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,

the start position must be reached.

Note remarks

Test sheet : STE 10.0 h1 Edition : 18.01.91 : 30.11.90 Replaces Test oil : ISO-4113

Combination no. : 0 401 846 940

Injection pump

Pump designation : PE6P110A720RS3243 : 0 411 816 770 EP type number

Governor

Governor design. : RQV250...1100PA413-6 Governer no. : 0 421 813 898

Customer-spec. information : SNF Customer

Engine : WD615.63

: 204.0 1st version kW : 2200 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

: 172...175 pressure, bar

Test Lines : 1 680 750 015

Outside diameter x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.80...2.90 Prestroke mm

: (2.75...2.95)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasina : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1100

Rack travel in mm : 12.70...12.80

Del.quantity cm3/: 16.4...16.6

100 s: (16.1...16.9)

Spread cm3 : 0.4

100 s: (0.7)

2nd speed rpm : 250.0 Rack travel in mm: 4.4...4.6 Del.quantity cm3/: 2.0...2.6

100 s: (1.7...2.9)

cm3 : 0.4Spread 100 s: (0.7)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 2501st speed 0.90...1.30 travel mm rpm : 350 2nd speed : 1.70...2.30 travel mm 3rd speed rpm : 700 : 4.40...5.00 travel mm rpm : 1145 4th speed

: 8.30...8.50 travel mm : 1250 5th speed rpm

travel mm : 9.50...9.90

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1 rpm : 1150

Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1100 Speed Aneroid pressure h: 1200

Del.quantity : 164.0...166.0

1000 : (161.0...169.0)

cm3 : 4.00Spread 1000 : (7.50)

RATED SPEED

1st version Control lever

position degrees: 106...114

Testing:

1st rack travel in: 11.70 rpm : 1140...1150 Speed

2nd rack travel in: 4.00

Speed rpm: 1240...1270 4th rack travel in: 1350

rpm : 0.00...1.00Speed

LOW IDLE 1 Control Lever

position degrees: 74...82

Testina:

: 100 Speed rpm Minimum rack trave: 6.00 : 250 Speed mon

Rack travel in mm : 4.40...4.60

CONSTANT REGULATION

rpm : 250...350 Speed

Aneroid/Altitude Compensator Test

1st version Setting

: 500 Speed rom hPa : 1200 Pressure

: 12.70...12.80 Rack travel mm

Measurement

 $1/\min : 500$ Speed

1st pressure hPa : -

Rack travel in m: 9.90...10.10

2nd pressure hPa : 500
Rack travel in m: 11.90...12.00
3rd pressure hPa : 325

Rack travel in m: 10.30...10.50

START CUT-OUT

1/min: 170 (190) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200 Speed rpm : 700

Del.quantity cm3/: 174.0...178.0 1000 s: (171.0...181.0)

Aneroid pressure h: rpm : 500 Speed

Del.quantity cm3/: 120.0...122.0 1000 s: (117.0...125.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.70

Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm

Del.quantity cm3/: 232.0...272.0

1000 s: (228.0...276.0)

Rack travel in mm : 17.50...18.50

Remarks:

Delivery-valve spring pre-tension =

2.40...2.60 mm.

Permissible alteration from 2.20...2.90

Note remarks

Test sheet : STE 10,0 g1 Edition : 18.01.91

Replaces : 30.11.90
Test oil : ISO-4113

Combination no. : 0 401 846 941

Injection pump

Pump designation : PE6P110A720RS3243 EP type number : 0 411 816 770

Governor

Governor design. : RQ300/1100PA412-5

Governer no. : 0 421 801 562

Customer-spec. information

Customer : SNF

Engine : WD615.63

1st version kW : 204.0 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Openina

pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter x Wall thickness

x Length mm : 6.00x1.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90

: (2.75...2.95)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance $+ - ^{\circ} : 0.50 (0.75)$

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1100

Rack travel in mm : 12.70...12.80

Del.quantity cm3/: 16.4...16.6

100 s: (16.1...16.9)

Spread cm3: 0.4

100 s: (0.7)

2nd speed rpm : 300.0 Rack travel in mm : 3.9...4.1

Del.quantity cm3/ : 1.7...2.3

100 s: (1.4...2.6) Spread cm3 : 0.4

100 s: (0.7)

GUIDE SLEEVE POSITION

Control-lever position
Degree: -1

Speed rpm: 600

Rack travel in mm : 14.60...15.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm: 1100

Aneroid pressure h: 1200

Del.quantity : 164.0...166.0 1000 : (161.0...169.0)

Spread cm3 : 4.00

1000 : (7.50)

RATED SPEED

1st version

Setting point:

Speed rpm : 600 Rack travel in mm : 15.0

Testing:

1st rack travel in: 11.70

Speed rpm : 1145...1160

2nd rack travel in: 4.00

Speed rpm : 1240...1270

4th rack travel in: 1350 rpm : 0.00...1.00 Speed

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 300 Rack travel in mm: 4.0

Testing:

rpm : 100 Speed Minimum rack trave: 5.50 rpm : 300 Speed

Rack travel in mm: 3.90...4.10 Rack travel in mm: 2.00 Speed rpm: 350...390

Aneroid/Altitude Compensator Test

1st version Setting

: 500 Speed rpm hPa : 1200 Pressure

: 12.70...12.80 Rack travel mm

Measurement

 $1/\min : 500$ Speed

1st pressure hPa : -

Rack travel in m: 9.90...10.10

2nd pressure hPa : 500

Rack travel in m: 11.90...12.00

3rd pressure hPa : 325

Rack travel in m: 10.30...10.50

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200 rpm : 700 Speed

Del.quantity cm3/: 174.0...178.0 1000 s: (171.0...181.0)

Aneroid pressure h: -

Speed rpm: 500 Del.quantity cm3/: 120.0...122.0 1000 s: (117.0...125.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 11.70

rpm : 1145...1160 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 232.0...272.0 1000 s: (228.0...276.0)

Rack travel in mm: 17.50...18.50

Remarks:

Delivery-valve spring pre-tension =

2.40...2.60 mm.

Permissible alteration from 2.20...2.90

Note remarks

Test sheet : MB 11,0 w 1 Edition : 18.01.91

Replaces

Test oil : ISO-4113

Combination no. : 0 401 846 943

Injection pump

Pump designation : PE6P110A320LS3851 EP type number : 0 411 816 765

Governor

Governor design. : RQV300...1050PA884-9

Governer no. : 0 421 813 912

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : 0M441

1st version kW : 151.0 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

assembly : 1 688 901 101

Opening |

pressure, bar : 207...210

Orifice plate

diameter mm : 0,6

Test Lines : 1 680 750 008

Outside diameter

x Wall thickness

x Length mm : 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.40...4.50

; (4.35...4.55)

Rack travel in mm : 9.00...12.00 Firing order : 6-3-5-2-4-1

Phasing : 0-60-120-180-240-300

Tolerance $+ - \circ : 0.50 (0.75)$

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm: 1050

Rack travel in mm : 11.00...11.10

Del.quantity cm3/: 11.8...12.0

100 s: (11.5...12.2)

Spread cm3 : 0.8

100 s: (1.3)

2nd speed rpm : 300.0 Rack travel in mm : 6.3...6.9 Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.4) ad cm3 : 0.6

Spread cm3 : 0.6 100 s: (1.1)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 0.50...1.00

2nd speed rpm : 460

travel mm : 2.70...3.20

3rd speed rpm : 730 travel mm : 4.70...5.20

4th speed rpm : 1107

travel mm : 7.90...8.40

5th speed rpm : 1370

travel mm : 11.00...12.00

GUIDE SLEEVE POSITION
Control-lever position

Control-lever position

Degree: -1 Speed rpm: 1100

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version Speed rpm : 1050 : 118.0...120.0 Del.quantity 1000 : (115.5...122.5) Spread cm3 : 8.50 1000 : (13.00) RATED SPEED 1st version Control lever position degrees: 114...122 Testing: 1st rack travel in: 10.00 Speed rpm : 1090...1100 2nd rack travel in: 4.00 rpm : 1180...1210 Speed 4th rack travel in: 1350 Speed rpm : 0.00...1.00LOW IDLE 1 Control lever position degrees: 83...91 Testing: rpm Speed : 200 Minimum rack trave: 8.20 rpm : 300 Speed Rack travel in mm : 6.30...6.90 Rack travel in mm : 2.00 : 300...500 Speed man START CUT-OUT 1/min : 220 (240) Speed FUEL DELIVERY CHARACTERISTICS 1st version : 600 Speed magn Del.quantity cm3/: 117.0...122.0 1000 s: (114.0...125.0) cm3 : 11.00 Spread 1000 s: (14.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 10.00 Speed rpm : 1090...1100 STARTING FUEL DELIVERY

: 100

rpm

Del.quantity cm3/: 130.0...150.0 1000 s: (126.0...154.0)

Remarks:

C22

Speed

Note remarks

Test sheet : MB 14,7 d 1 : 16.01.91 Edition : 18.9.97 Replaces Test oil : TSO-4113

Combination no. : 0 401 848 782

Injection pump

Pump designation : PE8P110A320LS3842 EP type number : 0 411 818 714

Governor

Governor design. : RQV300...950PA829-1K

: D 421 815 167 Governer no.

Customer-spec. information

Customer : DAIMLER-BENZ

: OM442 Engine

: 206.0 1st version kW : 1900 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

assembly : 0 681 343 009

Openina .

pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 4.00...4.10 Prestroke mm : (3.95...4.15)

Rack travel in mm : 9.00...12.00 Firing order : 8-7-2-6-3-5-

Phasing : 0-45-90-135-180-225-

270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm: 950

Rack travel in mm : 13.50...13.60

Del.quantity cm3/: 13.3...13.5

100 s: (13.0...13.7)

cm3 : 0.4Spread

100 s: (0.8)

rpm : 300.0 2nd speed Rack travel in mm: 8.8...9.0 Del.guantity cm3/: 1.5...2.1

100 s: (1.2...2.3)

cm3 : 0.4Spread 100 s: (0.7)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 300 1st speed travel mm 1.20...1.60

500 2nd speed rom travel mm : 4.40...4.80

3rd speed : 800 rpm

: 5.60...7.00 travel mm

4th speed : 1000 man

: 8.20...8.60 travel mm

: 1050 5th speed man

: 9.40...9.80 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

Speed rpm : 975 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 950 Speed

Del.quantity : 133.0...135.0 1000 : (130.5...137.5) cm3 : 4.00 1000 : (8.00) Spread RATED SPEED 1st version Control lever position degrees: 57...65 Testing: 1st rack travel in: 12.50 Speed rpm: 990...1000 2nd rack travel in: 4.00 rpm : 1045...1075 Speed 4th rack travel in: 1300 Speed rpm : 0.00...1.50 LOW IDLE 1 Control lever position degrees: 14...22 Testing: Speed : 100 man. Minimum rack trave: 10.50 rpm Rack travel in mm : 8.80...9.00 CONSTANT REGULATION rpm : 300...450 Speed TORQUE CONTROL Dimension a mm :? Torque control curve - 1st version rpm : 950 1st speed Rack travel in m: 13.50...13.60 rpm : 600 2nd speed Rack travel in m: 12.90...13.10 3rd speed rpm : 750 Rack travel in m: 13.20...13.40 START CUT-OUT 1/min: 220 (240) Speed FUEL DELIVERY CHARACTERISTICS 1st version rpm : 600 Speed Del.quantity cm3/: 118.0...121.0 1000 s: (115.0...124.0) cm3 : 6.00 Spread 1000 s: (9.00)

rpm : 750

cm3 : 6.00 1000 s: (9.00)

1000 s: (121.0...131.0)

Del.quantity cm3/: 124.0...128.0

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 12.50 rpm : 990...1000 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 130.0...150.0

1000 s: (126.0...154.0)

Remarks:

Speed

Spread

Note remarks

Test sheet : MB 14,7 r
Edition : 25.01.91
Replaces : 15.11.90
Test oil : ISO-4113

Combination no. : 0 401 848 808

Injection pump

Pump designation : PE8P110A320LS3846-1

EP type number : 0 411 818 719

Governor

Governor design. : RQV300...1050PA884-5

Governer no. : 0 421 813 831

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : 0M442

1st version kW : 213.0 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

assembly : 1 688 901 101

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,6

Test Lines : 1 680 750 008

Outside diameter

x Wall thickness

x Length mm : 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.40...4.50

: (4.35...4.55)
Pack travel in mm : 9.00 12.00

Rack travel in mm : 9.00...12.00 Firing order : 8-7-2-6-3-5-

4-1

Phasing : 0-45-90-135-180-225-

270-315

Tolerance $+ - \circ : 0.50 (0.75)$

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm: 1050

Rack travel in mm : 11.20...11.30

Del.quantity cm3/: 12.2...12.4

100 s: (11.9...12.6)

Spread cm3: 0.8

100 s: (1.3)

2nd speed rpm : 300.0 Rack travel in mm : 6.3...6.9

Del.quantity cm3/: 1.6...2.2 100 s: (1.3...2.4)

Spread cm3 : 0.6

100 s: (1.1)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm: 300

travel mm : 0.50...1.00

2nd speed rpm: 460

travel mm : 2.70...3.20

3rd speed rpm: 738

travel mm : 4.60...5.10 4th speed rpm : 1107

travel mm : 7.90...8.40

5th speed rpm : 1370

travel mm : 11.00...12.00

GUIDE SLEEVE POSITION Control-lever position

ontrol-lever position 1- Degree: –1

Speed rpm: 1100

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1050 Speed

: 122.0...124.0 Del.quantity 1000 : (119.5...126.5)

: 8.50 Spread Smo

1000 : (13.00)

RATED SPEED

1st version Control lever

position degrees: 116...124

Testina:

1st rack travel in: 10.20

Speed rom : 1080...1090

2nd rack travel in: 4.00

rpm : 1170...1200 Speed

4th rack travel in: 1350

Speed rom : 0.00...1.00

LOW IDLE 1 Control lever

position degrees: 85...93

Testina:

Speed : 200 rpm Minimum rack trave: 8.50 rpm : 300

Rack travel in mm : 6.30...6.90

CONSTANT REGULATION

rpm : 300...500 Speed

START CUT-OUT

1/min: 220 (240) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

: 600 Speed rpm

Del.quantity cm3/: 119.0...125.0

1000 s: (119.0...125.0)

cm3 : 11.00 Spread

1000 s: (14.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.20 rpm : 1080...1090 Speed

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 130.0...150.0 1000 s: (126.0...154.0)

Remarks:

Note remarks

: MB 14,7 r 1 : 25.01.91 Test sheet Edition : 5.11.90 Replaces : ISO-4113 Test oil

: 0 401 848 810 Combination no.

Injection pump

Pump designation : PE8P110A320LS3846-1 : 0 411 818 719

EP type number

Governor

Governor design. : RQV300...1050PA884-7

Governer no.

: 0 421 813 859

Customer-spec. information

Customer

: MERCEDES-BENZ

: 0M442 Engine

1st version kW : 195.0 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

assembly : 1 688 901 101

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

: 1 680 750 008 Test Lines

Outside diameter x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values ___

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 4.40...4.50 Prestroke mm

: (4.35...4.55)

Rack travel in mm : 9.00...12.00

Firing order : 8-7-2-6-3-5-

Phasing : 0-45-90-135-180-225-

270-315

Tolerance + - ° : 0.50 (0.75)

: 8 Time to cyl. no.

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 10.90...11.00

Del.quantity cm3/: 11.1...11.3

100 s: (10.8...11.5)

Spread cm3 : 0.8

100 s: (1.3)

rpm : 300.02nd speed Rack travel in mm : 7.0...7.6 Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.4) Spread cm3 : 0.6

100 s: (1.1)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

: 0.50...1.00 travel mm 2nd speed rpm : 460

2.70...3.20 travel mm

3rd speed : 738 rpm

: 4.60...5.10 travel mm

: 1107 4th speed rpm : 7.90...8.40 travel mm

rpm 3: 1370 5th speed

: 11.00...12.00 travel mm

GUIDE SLEEVE POSITION Control-lever position

Speed

Degree: -1 rpm : 1050

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version rpm : 1050 Speed : 111.0...113.0 Del.quantity 1000 : (108.5...115.5) Spread cm3 : 8.50 1000 : (13.00) RATED SPEED 1st version Control lever position degrees: 116...124 Testing: 1st rack travel in: 9.90 rpm : 1090...1100 2nd rack travel in: 4.00 rom : 1170...1200 Speed 4th rack travel in: 1350 Speed rpm : 0.00...1.00LOW IDLE 1 Control lever position degrees: 85...93 Testing: Speed : 200 rpm Minimum rack trave: 8.50 rpm : 300 Rack travel in mm : 6.40...7.00 CONSTANT REGULATION rpm : 300...500 Speed START CUT-OUT 1/min: 220 (240) Speed FUEL DELIVERY CHARACTERISTICS 1st version : 600 Speed rpm Del.quantity cm3/: 106.0...112.0 1000 s: (103.5...114.5) cm3 : 11.00 Spread 1000 s: (14.0) BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 9.90

Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 130.0...150.0 1000 s: (126.0...154.0)

Remarks:

Note remarks

: MB 14,7 c 9 Test sheet : 01.02.91 Edition : 30.11.90 Replaces : ISO-4113 Test oil

Combination no. : 0 401 848 814

Injection pump

Pump designation : PE8P110A320LS3842 : 0 411 818 714 EP type number

Governor

Governor design. : RQ300/1050PA187-31 : 0 421 801 553 Governer no.

Customer—spec. information

: MERCEDES-BENZ Customer

: OM442 Engine

: 195.0 1st version kW : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

assembly : 0 681 343 009

Opening

pressure, bar : 172...175

Test Lines : 1 680 750 015

Outside diameter x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY Test pressure, bar: 25...27

: 4.00...4.10 Prestroke mm : (3.95...4.15)

Rack travel in mm : 9.00...12.00 Firing order : 8-7-2-6-3-5-

: 0-45-90-135-180-225-Phasing

270-315 Tolerance + - * : 0.50 (0.75)

Time to cyl. no. :8

BASIC SETTING

rpm : 7501st speed

Rack travel in mm : 11.80...11.90

Del.quantity cm3/: 10.4...10.6

100 s: (10.1...10.8)

cm3 : 0.4Spread

100 s: (0.7)

rpm : 300.02nd speed Rack travel in mm: 8.2...8.5 Del.quantity cm3/: 1.5...2.1 100 s: (1.2...2.3)

cm3 : 0.4Spread 100 s: (0.7)

GUIDE SLEEVE POSITION Control-lever position

Degree: -1 Speed rpm : 650

Rack travel in mm : 13.60...14.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

: 750 Speed rpm

Del.quantity : 104.0...106.0 1000 : (101.5...108.5)

Spread cm3 : 4.00

: (7.50) 1000

RATED SPEED

1st version

Setting point: <

: 650 Speed rpm Rack travel in mm: 14.0

Testing:

1st rack travel in: 10.80

rpm : 1090...1100 Speed 2nd rack travel in: 4.00 rpm : 1150...1180 Speed 4th rack travel in: 1200 Speed rpm: 0.00...1.50 LOW IDLE 1 Setting point w/out bumper spring rpm : 300 Rack travel in mm: 6.9 Testina: Speed rpm : 200 Minimum rack trave: 9.00 rpm : 300 Rack travel in mm : 6.80...7.00 Rack travel in mm : 2.00 Speed rpm : 400...440 START CUT-OUT $1/\min : 1 (0)$ Speed FUEL DELIVERY CHARACTERISTICS 1st version rpm : 1050 Speed Del.quantity cm3/: 118.0...122.0 1000 s: (115.0...125.0) cm3 : 6.00Spread 1000 s: (9.00) RACK STOP ADJUSTMENT rpm : 600 Speed **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 10.80 rpm : 1090...1100 Speed STARTING FUEL DELIVERY rpm : 100 Speed Del.quantity cm3/: 140.0...160.0 1000 s: (136.0...164.0) Remarks:

Note remarks

: MB 14,7 d10 Test sheet : 01.02.91 Edition : 30.11.90 Replaces : ISO-4113 Test oil

Combination no. : 0 401 848 815

Injection pump

Pump designation : PE8P110A320LS3842 : 0 411 818 714 EP type number

Governor

Governor design. : RQV300...1050PA884-8

Governer no. : 0 421 813 889

Customer-spec, information

Customer : MERCEDES-BENZ

: 0M442 Engine

: 195.0 1st version kW : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

assembly : 0 681 343 009

Openina

: 172...175 pressure, bar

Test Lines : 1 680 750 015

Outside diameter x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 4.00...4.10 Prestroke mm : (3.95...4.15)

Rack travel in mm : 9.00...12.00 Firing order : 8-7-2-6-3-5-

Phasing : 0-45-90-135-180-225-

270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm: 750

Rack travel in mm : 11.80...11.90

Del.guantity cm3/: 10.4...10.6

100 s: (10.1...10.8)

Spread cm3 : 0.4

100 s: (0.7)

rpm : 300.02nd speed Rack travel in mm: 8.2...8.5 Del.quantity cm3/: 1.5...2.1 100 s: (1.2...2.3)

cm3 : 0.4Spread 100 s: (0.7)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 1.00...1.50

2nd speed rpm : 608

: 4.80...5.30 travel mm

3rd speed : 820 rpm

: 5.90...6.40 travel mm

4th speed : 1107 rpm

: 8.30...8.80 travel mm

: 1280 5th speed rom

: 11.00...12.00 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1130 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 750 Speed

Del.quantity : 104.0...106.0 1000 : (101.5...108.5)

Spread

cm3 : 4.00 1000 : (7.50)

RATED SPEED

1st version Control lever

position degrees: 117...125

Testing:

1st rack travel in: 10.80 rpm : 1090...1100 Speed

2nd rack travel in: 4.00

rpm : 1150...1180 Speed

4th rack travel in: 1250

rom : 0.00...1.00 Speed

LOW IDLE 1 Control lever

position degrees: 82...90

Testing:

rpm : 200 Speed Minimum rack trave: 10.00 rpm

Rack travel in mm : 6.80...7.00

CONSTANT REGULATION

rpm : 300...450 Speed

START CUT-OUT

1/min: 220 (240) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

rpm : 1050 Speed

Del.quantity cm3/: 118.0...122.0 1000 s: (115.0...125.0)

cm3 : 6.00Spread

1000 s: (9.00)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.80

rpm : 1090...1100 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/: 140.0...160.0

1000 s: (136.0...164.0)

Remarks:

Note remarks

Test sheet : MB 18,3 n 1
Edition : 01.02.91
Replaces : 30.11.90
Test oil : ISO-4113

Combination no. : 0 401 849 751

Injection pump

Pump designation : PE10P110A320LS3844 EP type number : 0 411 819 710

Governor

Governor design. : RQ300/1050PA187-32

Governer no. : 0 421 801 554

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : OM 443

1st version kW : 243.0 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 130...150

Test nozzle holder

assembly : 0 681 343 009

Openina |

pressure, bar : 172...175

Test Lines : 1 680 750 015

Outside diameter x Wall thickness

x Length mm : 6.00X1.50X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10 : (3.95...4.15)

Rack travel in mm : 9.00...12.00

Firing order : 10-9-4-1-8-7 -6-3-5-2

Phasing : 0-45-72-117-144-189-

216-261-288-333

Tolerance $+ - \circ : 0.50 (0.75)$

Time to cyl. no. : 10

BASIC SETTING

1st speed rpm: 750

Rack travel in mm : 11.60...11.70

Del.quantity cm3/: 10.2...10.4

100 s: (9.9...10.6)

Spread cm3:0.4

100 s: (0.7)

2nd speed rpm : 300.0

Rack travel in mm : 8.0...8.3 Del.quantity cm3/ : 1.5...2.1

100 s: (1.2...2.3)

Spread cm3 : 0.4

100 s: (0.7)

GUIDE SLEEVE POSITION

Control-lever position
Degree: -1

rpm : 600

Rack travel in mm : 13.60...14.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

Speed rpm: 750

Del.quantity : 102.0...104.0

1000 : (99.5...106.5)

Spread cm3 : 4.00

1000 : (7.50)

RATED SPEED

1st version

Setting point:

Speed rpm : 600 Rack travel in mm : 13.7

Testing:

1st rack travel in: 10.60

rpm : 1090...1100 Speed 2nd rack travel in: 4.00 rpm : 1150...1180 Speed 4th rack travel in: 1200 Speed rpm : 0.00...1.50 LOW IDLE 1 Setting point w/out bumper spring Speed rpm: 300 Rack travel in mm: 6.9 Testina: rpm : 200 Speed Minimum rack trave: 8.50 rpm : 300 Speed Rack travel in mm : 6.80...7.00 Rack travel in mm: 2.00 rpm : 400...440 Speed FUEL DELIVERY CHARACTERISTICS 1st version Speed rpm : 1050 Del.quantity cm3/: 116.0...120.0 1000 s: (113.0...123.0) Spread cm3 : 6.001000 s: (9.00) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 10.60 Speed rpm : 1090...1100 STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/ : 140.0...160.0 1000 s: (136.0...164.0) Remarks:

Note remarks

Test sheet : STE 10,0 b : 15.11.90 Edition : 12.9.86 Replaces

: ISO-4113 Test oil

Combination no. : 0 401 856 142

Injection pump

Pump designation : PE6P110A721RS369 : 0 411 816 121 EP type number

Governor

Governor design. : RQ300/1300PA412DR

: 0 421 803 086 Governer no.

Customer-spec. information : STEYR

Customer

Engine : WD615.60

1st version kW : 191.0 Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

: 172...175 pressure, bar

: 1 680 750 015 Test lines

Outside diameter x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.80...2.90 Prestroke mm

: (2.75...2.95)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1300

Rack travel in mm : 12.70...12.80

Del.guantity cm3/: 12.3...12.5

100 s: (12.0...12.8)

Spread cm3 : 0.4

100 s: (0.7)

2nd speed rpm : 250.0Rack travel in mm: 9.2...9.4

Del.quantity cm3/: 1.8...2.4

100 s: (1.5...2.6)

cm3 : 0.4Spread

100 s: (0.7)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

rpm : 600 Speed

Rack travel in mm: 15.40...16.60

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm: 1300 Aneroid pressure h: 700

Del.quantity : 123.0...125.0

1000 : (120.0...128.0)

cm3 : 4.00 Spread

1000 : (7.50)

RATED SPEED

1st version

Setting point:

: 600 rpm Rack travel in mm : 16.0

Testing:

1st rack travel in: 11.70

Speed rpm : 1345...1360 2nd rack travel in: 4.00

rpm : 1405...1435 Speed

4th rack travel in: 1550 rpm : 0.00...1.00Speed LOW IDLE 1 Setting point w/out bumper spring rpm : 300 Rack travel in mm: 6.0 Testing: : 100 Speed rom Minimum rack trave: 7.40 rpm : 300 Speed Rack travel in mm: 5.90...6.10
Rack travel in mm: 2.00
Speed rpm: 390...430 TORQUE CONTROL Dimension a mm : 0.40 Torque control curve - 1st version 1st speed rpm : 1300 Rack travel in m: 12.70...12.80 rpm : 700 2nd speed Rack travel in m: 13.60...13.80 3rd speed rpm : 900 Rack travel in m: 13.30...13.50 4th speed rpm : 1100 Rack travel in m: 12.90...13.10 Aneroid/Altitude Compensator Test 1st version Settina Speed : 500 man Pressure hPa : 700 Rack travel mm : 13.30...13.50 Measurement 1/min: 500 Speed 1st pressure hPa : -Rack travel in m: 12.40...12.60 2nd pressure hPa : 310 Rack travel in m: 13.10...13.20 3rd pressure hPa : 290 Rack travel in m: 12.90...13.10 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 700 rpm : 700 Speed Del.quantity cm3/: 114.0...116.0 1000 s: (111.0...119.0) Aneroid pressure h: -: 700 rpm Del.quantity cm3/: 98.0...100.0 1000 s: (95.0...103.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 11.70

Speed rpm : 1345...1360

STARTING FUEL DELIVERY

Del.quantity cm3/: 115.0...135.0 Rack travel in mm: 16.00...18.00

:

Remarks:

800

Note remarks

Test sheet : ENA 10.1 f Edition : 16.01.91

Replaces : 30.3.90 Test oil : ISO-4113

Combination no. : 0 401 876 332

Injection pump

Pump designation : PE6P100A820LS130 EP type number : 0 411 806 179

Governor

Governor design: : RSV250...1000P1A532

Governer no. : 0 421 833 273

Customer—spec. information Customer : ENASA

Engine : 9105.42.25.21

1st version kW : 113.0 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Opening

pressure, bar : 172...175

Test Lines : 1 680 750 015

Outside diameter x Wall thickness

x Length mm : 6.00X1.50X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90

: (2.75...2.95)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance $+ - ^{\circ} : 0.50 (0.75)$

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 750

Rack travel in mm : 11.90...12.00

Del.quantity cm3/: 11.3...11.5

100 s: (11.1...11.7)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 250.0 Rack travel in mm : 7.9...8.1

Del.quantity cm3/: 1.8...2.2 100 s: (1.5...2.4)

Spread cm3 : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position
Degree: -3

Speed rpm: 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 3.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm: 750

Del.quantity : 113.0...115.0 1000 : (111.0...117.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 84...92

Testing:

1st rack travel in: 10.90

Speed rpm : 790...800

2nd rack travel in: 4.00 Speed rpm : 815...845

009

3rd rack travel in: 4.00 Speed rpm: 815...845 4th rack travel in: 1000 rpm : 0.30...1.40 Speed LOW IDLE 1 Control lever position degrees: 63...71 Setting point w/out bumper spring rpm : 250 Rack travel in mm : 5.5 rpm : 250 Speed Rack travel in mm : 5.90...6.10 Rack travel in mm : 2.00 Speed rpm : 330...390 TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 750 Rack travel in m: 11.90...12.00 2nd speed rpm : 450 Rack travel in m: 11.90...12.10 3rd speed rpm : 300 Rack travel in m: 13.20...13.80

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 10.90 Speed rpm : 790...800

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 260.0...280.0 1000 s: (256.0...284.0) Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 250 Rack travel in mm : 5.90...6.10

Remarks:

APPLICATION

Generator set

Note remarks

Test sheet : ENA 11,9 g : 16.01.91 Edition : 14.9.90 Replaces Test oil : ISO-4113

: D 401 876 333 Combination no.

Injection pump

Pump designation : PE6P120A320RS257 EP type number : 0 411 826 075

Governor

Governor design. : RSV250...1100P0A533

Governer no. : 0 421 833 274

Customer-spec. information Customer : ENASA

: 96 T1A0 Engine

: 213.0 1st version kW Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 1 688 901 019

Opening |

: 207...210 pressure, bar

Orifice plate

diameter mm : 0.8

Test lines : 1 680 750 067

Outside diameter x Wall thickness

x Length mm : 6.00X1.50X1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.80...2.90 : (2.75...2.95) Prestroke mm

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

Phasing : 0-60-120-180-240-300

Tolerance $+ - ^{\circ} : 0.50 (0.75)$

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1050

Rack travel in mm : 10.30...10.40

Del.quantity cm3/: 18.7...18.9

100 s: (18.4...19.2)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 250.0 2nd speed Rack travel in mm : 5.9...6.1 Del.quantity cm3/ : 1.7...2.3

100 s: (1.4...2.6)

cm3 : 0.8 Spread

100 s: (1.2)

GUIDE SLEEVE POSITION Control-lever position Degree: -3

rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 2.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

: 187.0...189.0 Del.quantity 1000 : (184.0...192.0)

cm3 : 5.00 Spread

1000 : (9.00)

RATED SPEED

1st version Control lever

position degrees: 85...93

Testing:

1st rack travel in: 9.30

rpm : 1090...1100 Speed 2nd rack travel in: 4.00 rpm : 1110...1140 Speed 3rd rack travel in: 4.00 rpm : 1115...1145 Speed 4th rack travel in: 1300 rpm : 0.30...1.40 Speed LOW TDLF 1 Control lever position degrees: 60...68 Setting point w/out bumper spring rpm : 250 Speed Rack travel in mm : 5.5 Speed rpm : 250 Rack travel in mm : 5.90...6.10 Rack travel in mm : 2.00 : 350...410 Speed rom TORQUE CONTROL Torque control curve - 1st version rpm : 1050 1st speed Rack travel in m: 10.30...10.40 2nd speed rpm : 450 Rack travel in m: 10.30...10.50 3rd speed rpm : 300 Rack travel in m: 11.50...12.20 **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 9.30 Speed rpm : 1090...1100 STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/: 140.0...160.0 1000 s: (136.0...164.0) Rack travel in mm : 19.50...21.00 Remarks: APPLICATION Navy

Note remarks

Test sheet : ENA 11,9 g1 : 16.01.91 : 17.2.89 Edition Replaces Test oil : ISO-4113

Combination no. : 0 401 876 333A

Injection pump

Pump designation : PE6P120A320RS257 EP type number : 0 411 826 075

Governor

: RSV250...1100P0A533 Governor design.

: 0 421 833 274 Governer no.

: 181040-1 Cust. part no.

Customer-spec. information Customer : ENASA

: 96 T1AD Engine

: 240.0 1st version kW : 2200 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Opening |

pressure, bar : 207...210

Orifice plate

: 0,8 diameter mm

Test lines : 1 680 750 067

Outside diameter

x Wall thickness

x Length mm : 6.00X1.50X1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.80...2.90 Prestroke mm : (2.75...2.95)

Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4

: 0-60-120-180-240-300 Phasing

Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

rpm: 1100 1st speed

Rack travel in mm : 10.90...11.00

Del.quantity cm3/: 20.3...20.5

100 s: (20.0...20.8)

cm3 : 0.5Spread

100 s: (0.9)

2nd speed rpm : 250.0

Rack travel in mm : 5.7...5.9 Del.quantity cm3/ : 1.7...2.3

100 s: (1.4...2.6)

cm3 : 0.8 Spread

100 s: (1.2)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 4.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

: 203.0...205.0 Del.quantity 1000 : (200.0...208.0)

: 5.00 Spread cm3

: (9.00) 1000

RATED SPEED

1st version Control lever

position degrees: 91...99

Testing: 1st rack travel in: 9.90 rpm : 1115...1120 Speed 2nd rack travel in: 4.00 rpm : 1155...1185 Speed 3rd rack travel in: 4.00 Speed rpm : 1165...1195 4th rack travel in: 1350 rpm : 0.30...1.40 Speed LOW IDLE 1 Control Lever position degrees: 67...75 Setting point w/out bumper spring Speed rpm : 250 Rack travel in mm : 5.3 Testina: Speed rpm : 100 Minimum rack trave: 19.50 rpm : 250 Speed Rack travel in mm : 5.70...5.90 Rack travel in mm: 2.00 rpm : 350...410 Speed TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1100 Rack travel in m: 10.90...11.00 rpm : 450 2nd speed Rack travel in m: 10.90...11.00 : 250 3rd speed rom Rack travel in m: 12.10...12.70 **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 9.90 rpm : 1115...1120 Speed STARTING FUEL DELIVERY Speed : 100 rpm Del.quantity cm3/: 140.0...160.0 1000 s: (136.0...164.0) Rack travel in mm : 19.50...21.00 Remarks: APPLICATION Special-purpose vehicle

D14

Note remarks

Test sheet : ENA 11.9 g2
Edition : 16.01.91
Replaces : 17.2.89
Test oil : ISO-4113

Combination no. : 0 401 876 3338

Injection pump

Pump designation : PE6P12OA32ORS257 EP type number : 0 411 826 075

Governor

Governor design. : RSV250...1100P0A533

Governer no. : 0 421 833 274

Cust. part no. : 121111-1

Customer—spec. information Customer : ENASA

Engine : 96 T1AD

1st version kW : 228.0 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 1 688 901 019

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test Lines : 1 680 750 067

Outside diameter x Wall thickness

x Length mm : 6.00X1.50X1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90 : (2.75...2.95)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Phasing

Tolerance $+ - ^{\circ} : 0.50 (0.75)$

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1100

Rack travel in mm : 10.80...10.90

Del.quantity cm3/: 19.8...20.0

100 s: (19.5...20.3)

Spread cm3: 0.5

100 s: (0.9)

2nd speed rpm : 250.0 Rack travel in mm : 5.7...5.9 Del.quantity cm3/ : 1.7...2.3

100 s: (1.4...2.6)

Spread cm3 : 0.8 100 s: (1.2)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3 Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 4.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm: 1100

Del.quantity : 198.0...200.0 1000 : (195.0...203.0)

Spread cm3 : 5.00 1000 : (9.00)

RATED SPEED

1st version Control lever

position degrees: 91...99

Testina: 1st rack travel in: 9.80 rpm : 1110...1115 Speed 2nd rack travel in: 4.00 rpm : 1145...1175 Speed 3rd rack travel in: 4.00 rom : 1155...1185 Speed 4th rack travel in: 1350 Speed rpm: 0.30...1.40 LOW IDLE 1 Control Lever position degrees: 67...75 Setting point w/out bumper spring rpm : 250 Rack travel in mm: 5.3 Testina: Speed rpm : 100 Minimum rack trave: 19.50 rpm : 250 Speed Rack travel in mm : 5.70...5.90 Rack travel in mm: 2.00 rpm : 350...410 Speed TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1100 Rack travel in m: 10.80...10.90 2nd speed rpm : 450 Rack travel in m: 10.80...10.90 3rd speed rpm : 250 Rack travel in m: 12.00...12.60 **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 9.80 rpm : 1110...1115 Speed STARTING FUEL DELIVERY : 100 rpm Del.quantity cm3/: 140.0...160.0 1000 s: (136.0...164.0) Rack travel in mm: 19.50...21.00 Remarks: APPLICATION Special-purpose vehicle

Note remarks

Test sheet : ENA 11,9 q3 : 16.01.91 Edition Replaces : 17.2.89 Test oil : ISO-4113

Combination no. : 0 401 876 333c

Injection pump

Pump designation : PE6P120A320RS257 EP type number : 0 411 826 075

Governor

Governor design. : RSV250...1100P0A533

: 0 421 833 274 Governer no.

Cust. part no. : 181114-1

Customer-spec. information Customer : ENASA

: 96 T1A0 Engine

: 209.0 1st version kW : 2200 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Opening.

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter

x Wall thickness

: 6.00x1.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ___

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.80...2.90 : (2.75...2.95) Prestroke mm ·

Rack travel in mm : 9.00...12.00 : 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing .

Phasing.

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 900

Rack travel in mm : 11.20...11.30

Del.quantity cm3/: 21.2...21.4

100 s: (20.9...21.7)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 250.0 2nd speed Rack travel in mm: 5.7...5.9

Del.quantity cm3/ : 1.7...2.3

100 s: (1.4...2.6)

cm3 : 0.8Spread 100 s: (1.2)

GUIDE SLEEVE POSITION Control-lever position Degree: -3

rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 4.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm

: 212.0...214.0 Del.quantity 1000 ; (209.0...217.0)

: 5.00 cm3 Spread

1000 : (9.00)

RATED SPEED

1st version Control lever

position degrees: 86...94

Testing: 1st rack travel in: 10.20 rpm : 905...910 Speed 2nd rack travel in: 4.00 rpm : 955...985 Speed 3rd rack travel in: 4.00 Speed rpm : 965...995 4th rack travel in: 1150 rpm : 0.30...1.40 Speed LOW IDLE 1 Control lever position degrees: 67...75 Setting point w/out bumper spring rpm : 250 Rack travel in mm: 5.3 Testing: Speed : 100 rpm Minimum rack trave: 19.50 : 250 rpm Rack travel in mm : 5.70...5.90 Rack travel in mm : 2.00 : 350...410 Speed rpm TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 900 Rack travel in m: 11.20...11.30 2nd speed rpm : 450 Rack travel in m: 11.20...11.30 3rd speed rpm : 290 Rack travel in m: 12.40...13.00 BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 10.20 Speed rpm : 905...910 STARTING FUEL DELIVERY : 100 Speed rpm Del.quantity cm3/: 140.0...160.0 1000 s: (136.0...164.0) Rack travel in mm : 19.50...21.00 Remarks: **APPLICATION**

Special-purpose vehicle

Note remarks

Test sheet : ENA 11,9 04 : 16.01.91 Edition Replaces : 17.2.89

Test oil : ISO-4113

Combination no. : 0 401 876 333b

Injection pump

Pump designation: PE6P12OA32ORS257 EP type number : 0 411 826 075

Governor

Governor design. : RSV250...1100P0A533

: 0 421 833 274 Governer no.

: 181116-1 Cust. part no.

Customer-spec. information Customer : ENASA

Engine : 96 T1AD

1st version kW : 195.0 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Openina

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter

x Wall thickness

: 6.00X1.50X1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.80...2.90 Prestroke mm

: (2.75...2.95)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Phasina

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

rpm : 7501st speed

Rack travel in mm : 11.50...11.60

Del.quantity cm3/: 21.8...22.0

100 s: (21.5...22.3)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 250.0 2nd speed

Rack travel in mm : 5.7...5.9 Del.quantity cm3/ : 1.7...2.3 100 s: (1.4...2.6)

cm3 : 0.8 Spread

100 s: (1.2)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3 rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x: 4.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 750

: 218.0...220.0 Del.quantity 1000 : (215.0...223.0)

: 5.00 cm3 Spread

1000 : (9.00)

RATED SPEED

1st version Control lever

position degrees: 82...90

Testing: 1st rack travel in: 10.50 rpm : 755...760 Speed 2nd rack travel in: 4.00 rpm : 815...845 Speed 3rd rack travel in: 4.00 rpm : 825...855 Speed 4th rack travel in: 1000 rpm : 0.30...1.40Speed LOW IDLE 1 Control lever position degrees: 67...75 Setting point w/out bumper spring rpm : 250 Rack travel in mm: 5.3 Testing: Speed : 100 rom Minimum rack trave: 19.50 rpm : 250 Speed Rack travel in mm : 5.70...5.90 Rack travel in mm : 2.00 rom : 350...410 Speed TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 750 Rack travel in m: 11.50...11.60 2nd speed rpm : 450 Rack travel in m: 11.50...11.60 3rd speed rpm : 300 Rack travel in m: 12.70...13.30 **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 10.50 Speed rbm : 755...760 STARTING FUEL DELIVERY : 100 Speed rpm Del.quantity cm3/: 140.0...160.0 1000 s: (136.0...164.0) Rack travel in mm : 19.50...21.00 Remarks: APPLICATION

Special-purpose vehicle

Note remarks

Test sheet : ENA 11,9 q5 : 16.01.91 Edition : 17.2.89 Replaces : ISO-4113 Test oil

: 0 401 876 333E Combination no.

Injection pump

Pump designation: PE6P120A320RS257 EP type number : U 411 826 075

Governor

: RSV250...1100P0A533 Governor design.

: 0 421 833 274 Governer no.

Cust. part no. : 181211-1

Customer-spec. information Customer : ENASA

Engine : 96 T1AD

: 220.0 : 2200 1st version kW Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter

x Wall thickness

: 6.00X1.50X1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.80...2.90 : (2.75...2.95) Prestroke mm

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1000

Rack travel in mm : 10.90...11.00

Del.quantity cm3/: 20.0...20.2

100 s: (19.7...20.5)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 250.0 2nd speed Rack travel in mm: 5.7...5.9

Del.quantity cm3/: 1.7...2.3 100 s: (1.4...2.6)

cm3 : 0.8Spread

100 s: (1.2)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3 rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 4.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1000 Speed

: 200.0...202.0 Del.quantity 1000 : (197.0...205.0)

: 5.00 cm3 Spread

1000 : (9.00)

RATED SPEED

1st version

Control lever

position degrees: 87...95

Testing: 1st rack travel in: 9.90 rpm : 1010...1015 Speed 2nd rack travel in: 4.00 rpm : 1045...1075 Speed 3rd rack travel in: 4.00 Speed rpm : 1055...1085 4th rack travel in: 1250 Speed rpm : 0.30...1.40 LOW IDLE 1 Control lever position degrees: 67...75 Setting point w/out bumper spring rpm : 250 Rack travel in mm: 5.3 Testing: : 100 Speed rom Minimum rack trave: 19.50 rpm : 250 Rack travel in mm : 5.70...5.90 Rack travel in mm: 2.00 rpm : 350...410 Speed TORQUE CONTROL Torque control curve – 1st version 1st speed rpm : 1000 Rack travel in m: 10.90...11.00 2nd speed rpm : 450 Rack travel in m: 10.90...11.00 3rd speed rpm : 250 Rack travel in m: 12.10...12.70 BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 9.90 Speed rpm : 1010...1015 STARTING FUEL DELIVERY : 100 Speed rpm Del.quantity cm3/: 140.0...160.0 1000 s: (136.0...164.0) Rack travel in mm : 19.50...21.00 Remarks: : APPLICATION Special-purpose vehicle

Note remarks

: ENA 11,9 g6 Test sheet : 16.01.91 Edition : 17.2.89 Replaces

: ISO-4113 Test oil

Combination no. : 0 401 876 333F

Injection pump

Pump designation : PE6P120A320RS257 EP type number : 0 411 826 075

Governor

Governor design. : RSV250...1100P0A533

: 0 421 833 274 Governer no.

: 180727-1 Cust. part no.

Customer—spec. information Customer : FNASA

: 96 T1A0 Engine

: 221.0 1st version kW Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Opening |

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter

x Wall thickness

: 6.00X1.50X1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90

: (2.75...2.95)

Rack travel in mm : 9.00...12.00 : 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

rpm: 1000 1st speed

Rack travel in mm : 10.70...10.80

Del.quantity cm3/: 19.4...19.6

100 s: (19.1...19.9)

cm3 : 0.5Spread

100 s: (0.9)

2nd speed rpm : 250.0 Rack travel in mm : 5.7...5.9 Del.quantity cm3/: 1.7...2.3

100 s: (1.4...2.6)

cm3 : 0.8Spread

100 s: (1.2)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

008: man Speed

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 4.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1000 Speed

: 194.0...196.0 Del.quantity 1000 : (191.0...199.0)

: 5.00 cm3

Spread 1000 : (9.00)

RATED SPEED

1st version

Control lever

position degrees: 87...95

Testing: 1st rack travel in: 9.70 rpm : 1010...1020 Speed 2nd rack travel in: 4.00 rpm : 1045...1075 Speed 3rd rack travel in: 4.00 rpm : 1055...1085 Speed 4th rack travel in: 1250 rpm : 0.30...1.40Speed LOW IDLE 1 Control lever position degrees: 67...75 Setting point w/out bumper spring rpm : 250 Rack travel in mm: 5.3 Testing: : 100 Speed rpm Minimum rack trave: 19.50 Speed rpm : 250 Rack travel in mm : 5.70...5.90 Rack travel in mm : 2.00 : 350...410 Speed rom TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1000 Rack travel in m: 10.70...10.80 rpm : 450 2nd speed Rack travel in m: 10.70...10.80 3rd speed rpm : 250 Rack travel in m: 11.90...12.50 **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 9.70 rpm : 1010...1020 Speed STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/ : 140.0...160.0 1000 s: (136.0...164.0) Rack travel in mm: 19.50...21.00 Remarks: APPLICATION

Special-purpose vehicle

Note remarks

: ENA 10,1 a1 Test sheet Edition : 16.01.91

: 5.3.90 Replaces Test oil : ISO-4113

Combination no. : 0 401 876 339

Injection pump

Pump designation : PE6P110A820LS513-1

EP type number : 0 411 816 177 Governor

Governor design. : RSV250...1000P0A532-

: 0 421 833 331 Governer no.

Customer-spec. information Customer : FNASA

Engine : 95T1B0.MR4

1st version kW : 176.0 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Openina

pressure, bar : 172...175

Test Lines : 1 680 750 015

Outside diameter x Wall thickness

x Length mm : 6.00X1.50X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 3.20...3.30 Prestroke mm

: (3.15...3.35)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

rpm: 1000 1st speed

Rack travel in mm : 13.20...13.30

Del.quantity cm3/: 18.8...19.0

100 s: (18.5...19.3)

Spread cm3 : 0.4

100 s: (0.7)

rpm : 250.02nd speed Rack travel in mm: 6.5...6.7

Del.quantity cm3/: 1.8...2.2

100 s: (1.5...2.4) Spread

cm3 : 0.4 100 s: (0.7)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800 Speed Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 3.25

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

: 188.0...190.0 Del.quantity 1000 : (185.0...193.0)

Spread cm3 : 4.00

1000 : (7.50)

RATED SPEED

1st version

Control lever

position degrees: 86...94

Testing:

1st rack travel in: 12.20

rpm : 1040...1050 Speed

2nd rack travel in: 4.00

rpm : 1085...1115 Speed 3rd rack travel in: 4.00 rpm : 1085...1115 Speed 4th rack travel in: 1250 rpm : 0.30...1.40 Speed LOW IDLE 1 Control lever position degrees: 63...71 Setting point w/out bumper spring Speed rpm: 250
Rack travel in mm: 5.5
Speed rpm: 250
Rack travel in mm: 5.90...6.10
Rack travel in mm: 2.00 rpm : 330...390 Speed TORQUE CONTROL Torque control curve - 1st version rpm : 1000 1st speed Rack travel in m: 13.20...13.30 2nd speed rpm : 450 Rack travel in m: 13.20...13.30 3rd speed rpm : 300 Rack travel in m: 14.40...15.00 **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 12.20 Speed rpm : 1040...1050 STARTING FUEL DELIVERY : 100 Speed rom LOW IDLE Speed rpm : 250 Rack travel in mm : 5.90...6.10 Remarks:

026

APPLICATION

Navy

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks : PEN 12,2 d Test sheet

Fdition : 16.01.91 Replaces

: ISO-4113 Test oil

Combination no. ± 0 401 876 780

Injection pump

Pump designation: PE6P120A320RS3206-1 : 0 411 826 775

EP type number Governor

Governor design. : RSV250...900P4A550

: 0 421 833 354 Governer no.

Customer-spec. information : PENTA Customer

: TID121LP Engine

: 295.0 1st version kW : 1800 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 1 688 901 019

Openina

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

: 1 680 750 067 Test Lines

Outside diameter

x Wall thickness

: 6.00X1.50X1000 x Lenath mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY Test pressure, bar: 25...27

: 3.50...3.60 Prestroke mm : (3.45...3.65)

Rack travel in mm : 9.00...12.00 : 1-5-3-6-2-4 Firing order

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 700

Rack travel in mm : 12.20...12.30

Del.quantity cm3/: 29.8...30.0

100 s: (29.5...30.3)

cm3 : 0.5Spread

100 s: (0.9)

2nd speed rpm : 300.0 Rack travel in mm : 4.7...4.9

Del.quantity cm3/: 2.0...2.6 100 s: (1.7...2.9)

cm3 : 0.5Spread 100 s: (0.8)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3 Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 5.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

: 298.0...300.0 Del.quantity 1000 : (295.0...303.0)

5.00 Spread cm3

: (9.00) 1000

RATED SPEED

1st version Control lever

position degrees: 103...111

Testina:

1st rack travel in: 11.20

rpm : 945...955 Speed 2nd rack travel in: 4.00 rpm : 985...1015 Speed 4th rack travel in: 1150 rpm : 0.30...1.40 Speed LOW IDLE 1 Control lever position degrees: 74...82 Setting point w/out bumper spring rpm : 300° Speed Rack travel in mm: 4.3 Speed rpm : 300
Rack travel in mm : 4.70...4.90
Rack travel in mm : 2.00 rpm : 340...400 Speed BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 11.20 rpm : 945...955 Speed STARTING FUEL DELIVERY rpm : 100 Speed Del.quantity cm3/: 265.0...295.0 1000 s: (261.0...299.0) Remarks: Delivery-valve spring pre-tension = 2.40...2.60 mm. Permissible alteration from 2.20...2.90 ПТП

Note remarks

Test sheet : PEN 7,1 c 4 Edition : 16.01.91

Replaces

Test oil : ISO-4113

Combination no. : 0 401 876 781

Injection pump

Pump designation : PE6P110A320RS3147

EP type number : 0 411 816 743

Governor

Governor design. : RSV650...750P4A421-2

Governer no. : 0 421 833 336

Customer—spec. information Customer : PENTA

Engine : TD71AG

1st version kW : 127.0 Rated speed : 1500

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Opening

pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter

x Wall thickness

x Length mm : 6.00X1.50X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60 : (3.45...3.65)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance $+ - ^{\circ} : 0.50 (0.75)$

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 700

Rack travel in mm : 10.70...10.80

Del.quantity cm3/: 14.0...14.2

100 s: (13.7...14.5)

Spread cm3 : 0.4

100 s: (0.7)

2nd speed rpm : 650.0 Rack travel in mm : 4.5...4.7 Del.quantity cm3/: 1.7...2.1

100 s: (1.4...2.3)

Spread cm3 : 0.6 100 s: (0.9)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

Speed rpm: 800 Rack travel in mm: 0.30...0.70

Governor spring pre-tension Click setting x : 5.25

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm: 700

Del.quantity : 140.0...142.0 1000 : (137.0...145.0)

Spread cm3 : 4.00 1000 : (7.50)

RATED SPEED

1st version Control lever

position degrees: 86...94

Testing:

1st rack travel in: 9.70 Speed rpm : 742...747 2nd rack travel in: 4.00

Speed rpm : 771...784

4th rack travel in: 940 rpm : 0.30...1.70 Speed LOW IDLE 1 Control Lever position degrees: 81...89 Setting point w/out bumper spring : 650 rpm Rack travel in mm: 4.6 Speed : 650 rpm Rack travel in mm: 4.50...4.70 Rack travel in mm: 2.00 Speed rpm : 635...695 SET IDLE AUXILIARY SPRING Rack travel in mm: 2.00 STARTING FUEL DELIVERY rpm : 100 Speed Del.quartity cm3/: 155.0...175.0 1000 s: (151.0...179.0) Rack travel in mm : 20.00...21.00 LOW IDLE rpm : 650 Speed Rack travel in mm : 4.50...4.70 Del.quantity cm3/: 17.0...21.0 1000 s: (14.5...23.5) cm3 : 6.00 Spread 1000 s: (9.00) Remarks: Delivery-valve spring pre-tension = 2.40...2.60 mm. Permissible alteration from 2.20...2.90 **APPLICATION** Generator set

Note remarks

: PEN 12.1 b1 Test sheet Edition : 16.01.91

Replaces

Test oil : ISO-4113

Combination no. : 0 401 876 782

Injection pump

Pump designation : PE6P120A320RS3189 EP type number : 0 411 826 759

Governor

Governor design. : RSV650...750P4A421-3

Governer no. : 0 421 833 337

Customer-spec. information Customer : PENTA

Engine : TD121GG

: 199.0 1st version kW Rated speed : 1500

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter

x Wall thickness

: 6.00x1.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ___

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.60...2.70 : (2.55...2.75) Prestroke mm

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 11.40...11.50

Del.guantity cm3/: 24.1...24.3

100 s: (23.8...24.6)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 650.0 2nd speed

Rack travel in mm : 3.3...3.5 Del.quantity cm3/: 2.0...2.4

100 s: (1.7...2.7)

cm3 : 0.5 Spread

100 s: (0.7)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3 rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 4.75

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

: 241.0...243.0 Del.quantity

1000 : (238.0...246.0)

: 5.00 Spread cm3

1000 : (9.00)

RATED SPEED

1st version

Control lever

position degrees: 92...100

Testing:

1st rack travel in: 10.40

Speed rpm : 750...755 2nd rack travel in: 4.00 rpm : 791...804 Speed 4th rack travel in: 950 Speed rpm : 0.30...1.70

LOW IDLE 1 Control lever

position degrees: 85...93 Setting point w/out bumper spring

rpm : 650 Rack travel in mm: 3.4

Speed rpm : 650
Rack travel in mm : 3.30...3.50
Rack travel in mm : 2.00

rpm : 630...690 Speed

SET IDLE AUXILIARY SPRING Rack travel in mm: 2.00

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 10.40 Speed rpm : 750...755

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 480.0...520.0 Rack travel in mm : 20.00...21.00

Remarks:

APPLICATION

Generator

Note remarks

Test sheet : MB 14,7 s 2
Edition : 25.01.91
Replaces : 20.12.90
Test oil : ISO-4113

Combination no. : 0 401 878 715

Injection pump

Pump designation : PE8P110A320LS3842-1

EP type number : 0 411 818 716

Governor

Governor design. : RSV350...1050POA824-

13

Governer no. : 0 421 833 341

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : 0M442

1st version kW : 213.0 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

assembly : 0 681 343 009

Openina .

pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter

x Wall thickness

x Length mm : 6.00X1.50X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.90...4.10

: (3.95...4.15)

Rack travel in mm : 9.00...12.00 Firing order : 8-7-2-6-3-5-

4-1

Phasing : 0-45-90-135-180-225-

Phasing : 270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm: 1030

Rack travel in mm : 12.90...13.00

Del.quantity cm3/: 13.7...13.9

100 s: (13.4...14.1)

Spread cm3: 0.4

100 s: (0.8)

2nd speed rpm : 350.0

Rack travel in mm: 8.1...8.7

Del.quantity cm3/: 1.6...2.2 100 s: (1.3...2.4)

Spread cm3 : 0.4

100 s: (0.7)

GUIDE SLEEVE POSITION Control-lever position

ntrol-lever position Degree: -3

Speed rpm: 800

Rack travel in mm: 0.30...1.00

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIY. AT FULL LOAD STOP

1st version

Speed rpm: 1030

Del.quantity : 137.0...139.0

1000 : (134.5...141.5)

Spread cm3 : 4.00

1000 : (8.00)

RATED SPEED

1st version

Control lever

position degrees: 91...99

Testina: 1st rack travel in: 11.90 rpm : 1090...1100 Speed 2nd rack travel in: 4.00 Speed rpm : 1160...1190 4th rack travel in: 1400 rpm : 0.30...1.70Speed LOW IDLE 1 Control Lever position degrees: 70...78 Setting point w/out bumper spring rpm : 350 Speed Rack travel in mm: 8.4 rpm : 350 Speed Rack travel in mm : 8.30...8.50 Rack travel in mm : 2.00 Speed rpm : 410...470 SET IDLE AUXILIARY SPRING Rack travel in mm: 2.00 FUEL DELIVERY CHARACTERISTICS 1st version Speed rpm : 750 Del.quantity cm3/ : 124.0...128.0 1000 s: (121.0...131.0) Spread cm3 : 6.001000 s: (9.00) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 11.90 Speed rpm : 1090...1100 STARTING FUEL DELIVERY : 100 Speed rpm Del.quantity cm3/: 140.0...160.0 1000 s: (136.0...164.0) Remarks: :

Note remarks

Test sheet Edition Replaces

: MAN 10,0 a1 : 25.01.91 : 31.7.90

Test oil

: ISO-4113

Combination no. : 0 402 035 022

Injection pump

Pump designation : PES5P120A720/3LS512

EP type number Governor

: 0 412 025 021

Governor design. : RQ325/1000PA813-14

Governer no.

: 0 421 801 530

Customer-spec. information Customer : MAN

Engine

: D2865LF02

1st version kW

: 199.0

Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Opening

: 207...210 pressure, bar

Orifice plate

: 0,8 diameter mm

: 1 680 750 067 Test Lines

Outside diameter

x Wall thickness

: 6.00X1.50X1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

: 3.50...3.60 Prestroke mm

: (3.45...3.65)

Rack travel in mm : 9.00...12.00 Firing order : 1-3-5-4-2

: 0-72-144-216-288 Phasing

Tolerance $+ - ^{\circ} : 0.50 (0.75)$

Time to cyl. no. : 5

BASIC SETTING

1st speed rpm: 750

Rack travel in mm : 11.10...11.20

Del.guantity cm3/: 21.7...21.9

100 s: (21.4...22.2)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 325.0 2nd speed

Rack travel in mm : 4.2...4.6 Del.quantity cm3/: 1.7...2.3 100 s: (1.4...2.6)

cm3 : 0.8Spread

100 s: (1.2)

GUIDE SLEEVE POSITION Control-lever position

Degree: -2

rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 750 Speed Aneroid pressure h: 1000

: 217.0...219.0 Del.quantity 1000 : (214.0...222.0)

: 5.00 cm3 Spread

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed : 600 rom Rack travel in mm: 20.0

Testing:

1st rack travel in: 9.90

rpm : 1045...1060 Speed 2nd rack travel in: 4.00 rpm : 1100...1130 Speed 4th rack travel in: 1250 Speed топ : 0.00...1.00 LOW IDLE 1 Setting point w/out bumper spring : 325 rom Rack travel in mm: 4.4 Testing: Speed : 100 riom Minimum rack trave: 5.90 : 325 man Rack travel in mm : 4.30...4.50 Rack travel in mm: 2.00 rpm : 360...400 Speed TORQUE CONTROL Dimension a mm : 0.20 Torque control curve - 1st version rpm : 1000 1st speed Rack travel in m: 10.90...11.00 nd speed rpm : 750 2nd speed Rack travel in m: 11.30...11.50 3rd speed rpm : 850 Rack travel in m: 11.10...11.30 Aneroid/Altitude Compensator Test 1st version Setting Speed rom : 500 hPa : 1000 Pressure : 11.10...11.20 Rack travel mm Measurement Speed 1/min : 500 1st pressure hPa : -Rack travel in m: 8.30...8.50 2nd pressure hPa : 100 Rack travel in m: 8.70...8.80 3rd pressure hPa : 350 Rack travel in m: 10.40...10.60 START CUT-OUT Speed 1/min: 220 (240) FUEL DELIVERY CHARACTERISTICS 1st version

Del.quantity cm3/: 213.0...217.0 1000 s: (210.0...220.0) Aneroid pressure h: 1000 Speed rpm : 650 Del.quantity cm3/: 207.0...213.0 1000 s: (204.0...216.0) Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/: 134.0...136.0 1000 s: (131.0...139.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 9.90 rpm : 1045...1060 Speed STARTING FUEL DELIVERY rpm : 100 Speed Del.quantity cm3/: 190.0...210.0 1000 s: (186.0...214.0) LOW IDLE Speed rpm : 325 Rack travel in mm : 4.20...4.60 Del.quantity cm3/: 17.0...23.0 1000 s: (14.0...26.0) cm3 : 8.00 Spread 1000 s: (12.00) Remarks: : MAN-NR. 3-7043 Setting and blocking of pointer of start-of-delivery sensor on cyl. 5 start of delivery

Speed

Aneroid pressure h: 1000

rom : 1000

Note remarks

: MAN 10,0 a3 Test sheet Edition : 16.01.91

Replaces

: ISO-4113 Test oil

: 0 402 035 023 Combination no.

Injection pump

Pump designation: PES5P120A720/3LS512

: 0 412 025 021 EP type number

Governor

Governor design. : RQ325/950PA813-15

: 0 421 801 532 Governer no.

Customer-spec. information Customer : MAN

: D2865LF0/LU/01 Engine

1st version kW : 198.0 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil

: 38...42 inlet temp. °C

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Opening |

: 207...210 pressure, bar

Orifice plate

diameter mm : 0.8

Test Lines : 1 680 750 067

Outside diameter x Wall thickness

x Length mm : 6.00X1.50X1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.50...3.60 : (3.45...3.65)

Rack travel in mm : 9.00...12.00 Firing order : 1-3-5-4-2

Phasing : 0-72-144-216-288

: 0.50 (0.75) Tolerance + - °

Time to cyl. no. : 5

BASIC SETTING

1st speed rpm: 750

Rack travel in mm : 11.70...11.80

Del.quantity cm3/ : 21.9...22.1

100 s: (21.6...22.4)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 325.0 2nd speed

Rack travel in mm: 4.6...4.8

Del.quantity cm3/: 1.7...2.3 100 s: (1.4...2.6)

cm3 : 0.8

Spread 100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position Degree: -2

rpm : 600 Speed

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 750 Speed

Aneroid pressure h: 1000

: 219.0...221.0 Del.quantity 1000 : (216.0...224.0)

: 5.00 Spread cm3

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed : 600 Rack travel in mm: 20.0

Testing:

1st rack travel in: 10.60

rpm : 995...1010 Speed

2nd rack travel in: 4.00

Speed rpm : 1030...1060 4th rack travel in: 1200

rpm : 0.00...1.00 Speed

LOW IDLE 1

Setting point w/out bumper spring

rpm : 325 Rack travel in mm: 4.7

Testing:

rpm : 100 Speed Minimum rack trave: 6.20 rpm : 325

Rack travel in mm : 4.60...4.80

Rack travel in mm : 2.00 Speed rpm : 350...390

TORQUE CONTROL

Dimension a mm : 0.20

Torque control curve - 1st version

1st speed rpm : 950

Rack travel in m: 11.40...11.60 2nd speed rpm : 750

Rack travel in m: 11.80...12.00

rpm : 850 3rd speed

Rack travel in m: 11.50...11.90

Aneroid/Altitude Compensator Test

1st version

Settina

: 500 Speed rpm Pressure hPa : 1000

: 11.70...11.80 Rack travel mm

Measurement

Speed 1/min: 500

1st pressure hPa : -

Rack travel in m: 8.40...8.60

2nd pressure hPa : 110 Rack travel in m: 8.80...8.90

3rd pressure hPa : 450

Rack travel in m: 11.00...11.20

START CUT-OUT

1/min: 220 (240) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000 Speed rpm : 950

Del.quantity cm3/: 216.0...220.0 1000 s: (213.0...223.0) Aneroid pressure h: 1000

Speed rpm : 600 Del.quantity cm3/ : 210.0...216.0 1000 s: (207.0...219.0)

Aneroid pressure h: -: 500 Speed rom

Del.quantity cm3/: 128.0...130.0 1000 s: (125.0...133.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.60

rpm : 995...1010 Speed

STARTING FUEL DELIVERY

Speed : 100 rpm

Del.quantity cm3/: 190.0...210.0 1000 s: (186.0...214.0)

LOW IDLE

rpm : 325 Speed

Rack travel in mm : 4.60...4.80 Del.quantity cm3/: 17.0...23.0 1000 s: (14.0...26.0)

Spread cm3 : 8.00

1000 s: (12.00)

Remarks:

: MAN-NR. 3-7044

Setting and blocking of pointer of start-of-delivery sensor on cyl. 5

start of delivery

: 3.50...3.60 BOSCH INJ. PUMP TEST SPECIFICATIONS Prestroke mm : (3.45...3.65) Rack travel in mm : 9.00...12.00 Note remarks : 1- 3- 5- 4- 2 Firing order : MAN 10,0 b3 Test sheet Edition : 25.01.91 Replaces : 0-72-144-216-288 : ISO-4113 Test oil Phasing : 0.50 (0.75) Combination no. : 0 402 035 024 Tolerance + - ° Injection pump Time to cyl. no. : 5 Pump designation : PES5P120A720/3LS512 EP type number : 0 412 025 021 BASIC SETTING Governor Governor design. : RQV325...1000PA876-5 1st speed rpm: 750 : 0 421 813 865 Governer no. Rack travel in mm : 11.10...11.20 Customer-spec. information : MAN Del.quantity cm3/: 21.7...21.9 Customer Engine : D2865LF02 100 s: (21.4...22.2) 1st version kW : 199.0 Spread cm3 : 0.5: 2000 Rated speed 100 s: (0.9) TEST BENCH REQUIREMENTS 2nd speed rpm : 325.0 Rack travel in mm : 4.2...4.6 Del.quantity cm3/: 1.7...2.3 100 s: (1.4...2.6) Test oil : 38...42 inlet temp. °C cm3 : 0.8 Overflow valve Spread : 1 417 413 025 100 s: (1.2) Inlet press., bar: 1.50 (B) Setting of injection pump with governor Test nozzle holder : 1 688 901 019 assembly GUIDE SLEEVE TRAVEL rpm : 1045 1st speed 9.70...9.90 **Opening** travel mm : 325 : 1.30...1.70 : 207...210 pressure, bar 2nd speed man travel mm 500 Orifice plate 3rd speed rpm : 3.10...3.70 diameter mm : 0,8 travel mm : 800 4th speed rpm : 6.60...7.00 travel mm : 1250 Test lines : 1 680 750 067 5th speed rpm : 13.00...14.00 travel mm Outside diameter x Wall thickness GUIDE SLEEVE POSITION : 6.00x1.50x1000 Control-lever position x Length mm Degree: -1 rpm : 1075 (A) Injection pump setting values Insp. values in parentheses Speed Rack travel in mm : 15.20...17.80 Set equal delivery quant. FULL LOAD DELIV. AT FULL LOAD STOP per values BEGINNING OF DELIVERY 1st version Test pressure, bar: 30...32 rpm : 750 Speed

Aneroid pressure h: 1000

Del.quantity : 217.0...219.0 1000 : (214.0...222.0) cm3 : 5.00 Spread 1000 : (9.00) RATED SPEED 1st version Control Lever position degrees: 296...304 Testing: 1st rack travel in: 9.90 Speed rpm : 1040...1050 2nd rack travel in: 4.00 rpm : 1090...1120 Speed 4th rack travel in: 1250 rpm : 0.00...1.00 Speed LOW IDLE 1 Control Lever position degrees: 254...262 Testing: rpm : 100 Speed Minimum rack trave: 5.90 rom Rack travel in mm : 4.30...4.50 CONSTANT REGULATION rpm : 280...400 Speed TORQUE CONTROL Dimension a mm : 0.60 Torque control curve - 1st version rpm : 750 1st speed Rack travel in m: 10.70...10.80 nd speed rpm : 1000 Rack travel in m: 11.30...11.50 2nd speed 3rd speed rpm : 900 Rack travel in m: 11.10...11.30 Aneroid/Altitude Compensator Test 1st version Setting Speed : 500 rpm hPa : 1000 Pressure

: 11.10...11.20 Rack travel mm Measurement Speed $1/\min : 500$ 1st pressure hPa : -Rack travel in m: 8.30...8.50 2nd pressure hPa : 100 Rack travel in m: 8.70...8.80 3rd pressure hPa : 350 E12

Rack travel in m: 10.40...10.60 START CUT-OUT 1/min: 220 (240) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1000 rpm : 1000 Speed Del.quantity cm3/: 213.0...217.0 1000 s: (210.0...220.0) Aneroid pressure h: 1000 : 650 Speed man Del.quantity cm3/: 207.0...213.0 1000 s: (204.0...216.0) Aneroid pressure h: -Speed rpm: 500 Del.quantity cm3/: 134.0...136.0 1000 s: (131.0...139.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 9.90 rpm : 1040...1050 Speed STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/: 190.0...210.0 1000 s: (186.0...214.0) LOW IDLE rpm : 325 Speed Rack travel in mm : 4.20...4.60 Del.quantity cm3/: 17.0...23.0 1000 s: (14.0...26.0) cm3 : 8.00 Spread 1000 s: (12.00) Remarks: : MAN-NR. 3-7045 Setting and blocking of pointer of

start-of-delivery sensor on cyl. 5

start of delivery

Note remarks

Test sheet : MAN 11,9a13 : 01.02.91 Edition : 15.12.89 Replaces : ISO-4113 Test oil

: 0 402 036 044 Combination no.

Injection pump

Pump designation: PES6P120A720/3LS470-

: 0 412 026 050 EP type number

Governor

Governor design. : RQ300/1100PA658-19

: 0 421 801 323 Governer no.

Customer-spec. information : MAN Customer

Engine : D2866LFZ

: 243.0 1st version kW Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test Lines : 1 680 750 067

Outside diameter x Wall thickness

: 6.00x1.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 2.80...2.90 : (2.75...2.95)

Rack travel in mm : 9.00...12.00

: 6-2-4-1-5-3 Firing order

: 0-60-120-180-240-300 Phasina

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rom: 750

Rack travel in mm : 11.30...11.40

Del.quantity cm3/: 20.7...20.9

100 s: (20.4...21.2)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 300.02nd speed Rack travel in mm : 4.6...4.8 Del.quantity cm3/ : 1.2...1.8

100 s: (0.9...2.1) cm3 : 0.8

Spread 100 s: (1.2)

GUIDE SLEEVE POSITION Control-lever position Degree: -2

rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 750 Speed Aneroid pressure h: 1000

: 207.0...209.0 Del.quantity 1000 : (204.0...212.0)

Spread cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

rpm : 600 Speed Rack travel in mm: 20.0

Testing:

1st rack travel in: 9.50 Aneroid pressure h: 1000 rpm : 1145...1160 : 1100 Speed Speed rpm Del.quantity cm3/: 203.0...207.0 2nd rack travel in: 4.00 rpm : 1185...1215 1000 s: (200.0...210.0) Speed Aneroid pressure h: 1000 4th rack travel in: 1300 Speed rpm : 0.00...1.00rpm : 650 Speed Del.quantity cm3/: 208.0...214.0 1000 s: (205.0...217.0) LOW IDLE 1 Aneroid pressure h: 280 Setting point w/out bumper spring rpm : 300 : 500 Speed rom Del.quantity cm3/: 184.0...196.0 1000 s: (181.0...199.0) Rack travel in mm: 4.7 Aneroid pressure h: -Testing: Speed rpm : 500 Del.quantity cm3/: 132.0...134.0 rpm : 100 Speed Minimum rack trave: 6.20 : 300 1000 s: (129.0...137.0) rom Rack travel in mm : 4.60...4.80 Rack travel in mm : 2.00 rpm : 340...380 Speed BREAKAWAY TORQUE CONTROL 1st version Dimension a mm : 0.50 1mm rack travel less than Torque control curve - 1st version rpm : 1100 full load rack tr: 9.50 1st speed Rack travel in m: 10.60...10.80 od speed ppm : 750 rpm : 1145...1160 Speed 2nd speed Rack travel in m: 11.90...12.20 STARTING FUEL DELIVERY rpm : 875 3rd speed Rack travel in m: 11.80...12.00 4th speed rpm : 950 : 100 Speed rpm Del.quantity cm3/: 225.0...245.0 1000 s: (221.0...249.0) Rack travel in m: 11.20...11.50 Aneroid/Altitude LOW IDLE Compensator Test Speed rpm : 300 Rack travel in mm : 4.60...4.80 1st version Del.quantity cm3/: 12.0...18.0 Setting 1000 s: (9.0...21.0) Speed : 500 rom hPa : 1000 Pressure Spread cm3 : 8.001000 s: (12.00) Rack travel mm : 11.30...11.40 Measurement Remarks: 1/min: 500 Speed : MAN-NR. 2-7756 1st pressure hPa : -Rack travel in m: 8.90...9.10 2nd pressure hPa : 85 Rack travel in m: 9.30...9.40
3rd pressure hPa : 280 Rack travel in m: 10.50...10.90 START CUT-OUT Speed 1/min : 220 (240) FUEL DELIVERY CHARACTERISTICS 1st version

E14

Note remarks

Test sheet : MAN 11,9 r1 : 25.01.91 Edition Replaces : 5.11.90 Test oil : ISO-4113

Combination no. : 0 402 036 735X

Injection pump

Pump designation : PES6P120A720/3LS3250

EP type number : 0 412 026 742

Governor

: RQ300/1000PA813-13 Governor design.

: 0 421 801 529 Governer no.

: 3-7050x Cust. part no.

Customer-spec. information Customer : MAN

Engine : D2866LX

1st version kW : 273.0 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Opening.

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test Lines : 1 680 750 067

Outside diameter

x Wall thickness

: 6.00x1.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 3.70...3.80 Prestroke mm

: (3.65...3.85)

Rack travel in mm : 14.50...15.50

: 6-2-4-1-5-3 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance $+ - ^{\circ} : 0.50 (0.75)$

Time to cyl. no. : 6

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 5.90...6.10 & maximum rack tra: 15.0...16.0 Difference ° CS : 2.00...4.00

BASIC SETTING

rpm: 700 1st speed

Rack travel in mm : 15.00...15.10

Del.quantity cm3/: 24.2...24.4

100 s: (23.9...24.7)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 300.0 2nd speed

Rack travel in mm : 4.8...5.2 Del.quantity cm3/ : 1.7...2.3

100 s: (1.4...2.6) cm3 : 0.8Spread

100 s: (1.2)

GUIDE SLEEVE POSITION Control-lever position

Degree: -2

rpm : 650

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rom : 700 Speed Aneroid pressure h: 1200

: 242.0...244.0 Del.quantity

1000 : (239.0...247.0) cm3 : 5.00

Spread

1000 : (9.00)

RATED SPEED

1st version

Setting point:

: 650 Speed Rack travel in mm : 20.0

Testing:

1st rack travel in: 14.00 Speed rpm : 1045...1060

2nd rack travel in: 4.00

rpm : 1090...1120 Speed

4th rack travel in: 1350

rpm : 0.00...1.00Speed

LOW IDLE 1

Setting point w/out bumper spring

rpm : 300 Rack travel in mm: 5.0

Testing:

rpm : 100 Speed

Minimum rack trave: 6.50 rpm : 300 Speed

Rack travel in mm : 4.90...5.10

Rack travel in mm: 2.00

rpm : 360...400 Speed

TORQUE CONTROL

Dimension a mm : 0.20

Torque control curve - 1st version

1st speed rpm : 1000

Rack travel in m: 15.00...15.10 2nd speed rpm : 700 Rack travel in m: 15.50...15.70

Aneroid/Altitude Compensator Test

1st version

Setting

: 500 Speed rom hPa : 1200 Pressure

: 15.00...15.10 Rack travel mm

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 11.70...11.90 2nd pressure hPa : 110 Rack travel in m: 12.00...12.10

3rd pressure hPa : 470

Rack travel in m: 13.70...14.10

START CUT-OUT

1/min : 220 (240) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200

rpm_ : 1000 Speed

Del.quantity cm3/: 243.0...247.0

1000 s: (240.0...250.0)

: 700 rpm Speed

Del.quantity cm3/: 89.0...99.0 1000 s: (86.0...102.0)

cm3 : 10.00 Spread 1000 s: (14.0)

Aneroid pressure h: -

Speed rpm : 500 Del.quantity cm3/: 134.0...136.0 1000 s: (131.0...139.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 14.00

rpm : 1045...1060 Speed

INTERMEDIATE RATED SPEED

Rack travel in mm: 4.00

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 210.0...230.0 1000 s: (206.0...234.0)

LOW IDLE

Speed rpm : 300 Rack travel in mm : 4.80...5.20

Del.quantity cm3/: 17.0...23.0 1000 s: (14.0...26.0)

cm3 : 8.00 Spread

1000 s: (12.00)

Remarks:

Setting and blocking of pointer of start-of-delivery sensor on cyl. 6

start of delivery

Note remarks

Test sheet : MAN 11,9 u1
Edition : 25.01.91
Replaces : 7.1.91
Test oil : ISO-4113

Combination no. : 0 402 036 740

Injection pump

Pump designation : PES6P120A720/3LS3255

EP type number : 0 412 026 739

Governor

Governor design. : RQ300/1000PA813-13

Governer no. : 0 421 801 529

Customer-spec. information Customer : MAN

Engine : D2866LF03

1st version kW : 273.0 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 1 688 901 019

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0.8

Test lines : 1 680 750 067

Outside diameter x Wall thickness

x Length mm : 6.00x1.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.70...3.80

: (3.65...3.85)
Rack travel in mm : 14.50...15.50

Firing order : 6-2-4-1-5-3

Phasing : 0-60-120-180-240-300

Tolerance $+ - ^{\circ} : 0.50 (0.75)$

Time to cyl. no. : 6

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 5.90...6.10 & maximum rack tra: 15.0...16.0 Difference ° CS : 2.00...4.00

BASIC SETTING

1st speed rpm: 700

Rack travel in mm : 15.00...15.10

Del.quantity cm3/: 24.2...24.4

100 s: (23.9...24.7)

Spread cm3: 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 4.9...5.3 Del.quantity cm3/ : 1.7...2.3

100 s: (1.4...2.6)

Spread cm3: 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION Control-lever position

Degree: -2 rpm : 550

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 1200

Del.quantity : 242.0...244.0 1000 : (239.0...247.0)

Spread cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point: : 550 Speed rom Rack travel in mm: 20.0 Testing: 1st rack travel in: 13.80 rpm : 1045...1060 Speed 2nd rack travel in: 4.00 Speed rpm: 1160...1190 4th rack travel in: 1300 rpm : 0.00...1.00 Speed LOW IDLE 1 Setting point w/out bumper spring Speed rom Rack travel in mm : 5.0 Testina: : 200 Speed rom Minimum rack trave: 6.50 rpm : 300 Rack travel in mm : 4.90...5.10 Rack travel in mm : 2.00 Speed rpm : 360...400 TORQUE CONTROL Dimension a mm :? Torque control curve - 1st version 1st speed rpm : 1000 Rack travel in m: 14.80...14.90 2nd speed rpm : 700 Rack travel in m: 15.30...15.50 Aneroid/Altitude Compensator Test 1st version Setting Speed : 500 rpm hPa : 1200 Pressure : 15.00...15.10 Rack travel mm Measurement 1/min: 500 Speed 1st pressure hPa : -

Rack travel in m: 11.70...11.90
2nd pressure hPa : 110
Rack travel in m: 12.00...12.10 3rd pressure hPa : 470 Rack travel in m: 13.70...14.10 START CUT-OUT

1/min: 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version Aneroid pressure h: 1200 : 1000 Speed rpm Del.quantity cm3/: 236.0...242.0 1000 s: (233.0...245.0) rpm : 700 Speed Del.quantity cm3/: 89.0...99.0 1000 s: (86.0...102.0) Aneroid pressure h: -Speed rpm: 500 Del.quantity cm3/: 134.0...136.0 1000 s: (131.0...139.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 13.80

INTERMEDIATE RATED SPEED Rack travel in mm: 4.00

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/: 220.0...240.0 1000 s: (216.0...244.0)

rpm : 1045...1060

LOW IDLE

Speed

pm : 300 Rack travel in mm : 4.90...5.30 Del.quantity cm3/: 17.0...23.0 1000 s: (14.0...26.0) cm3 : 8.00 Spread 1000 s: (12.00)

Remarks:

: MAN-NR. 0-7050

Setting and blocking of pointer of start-of-delivery sensor on cyl. 6 start of delivery

Speed

Note remarks

Test sheet : MB 10,0 L 2 : 18.01.91 Edition

Replaces

: ISO-4113 Test oil

Combination no. : 0 402 045 700

Injection pump

Pump designation : PES5P110A720LS3218 : 0 412 015 700 EP type number

Governor

Governor design. : R0300/1100PA327-10

: 0 421 801 457 Governer no.

Customer-spec. information

Customer : MERCEDES-BENZ

: 0M449 Engine

: 147.0 1st version kW : 2200 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

assembly : 0 681 343 009

Opening.

: 172...175 pressure, bar

Test lines : 1 680 750 015

Outside diameter

x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ___

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 4.30...4.40 Prestroke mm : (4.25...4.45)

Rack travel in mm : 9.00...12.00

Firing order : 1-3-5-4-2

Phasina : 0-72-144-216-288

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 5

BASIC SETTING

rpm: 1100 1st speed

Rack travel in mm : 11.20...11.30

Del.quantity cm3/: 14.4...14.6

100 s: (14.1...14.8)

cm3 : 0.4Spread

100 s: (0.8)

rom : 300.02nd speed

Rack travel in mm: 6.8...7.2 Del.quantity cm3/: 1.2...1.8

100 s: (0.9...2.0)

cm3 : 0.4 100 s: (0.7) Spread

GUIDE SLEEVE POSITION

Control-lever position Degree: -1

rpm : 600

Rack travel in mm : 13.00...14.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

: 144.0...146.0 Del.quantity

1000 : (141.5...148.5)

: 4.00 Spread cm3

1000 : (8.00)

RATED SPEED

1st version

Setting point:

Speed rom

Rack travel in mm: 13.5

Testing:

1st rack travel in: 10.20

rpm : 1140...1150 Speed

2nd rack travel in: 4.00 rpm : 1200...1230 Speed 4th rack travel in: 1250 Speed rpm : 0.00...1.50LOW IDLE 1 Setting point w/out bumper spring Speed rpm : 300 Rack travel in mm : 7.0 Testing: : 200 Speed rpm Minimum rack trave: 9.00 rpm : 300 Rack travel in mm : 6.80...7.20 Rack travel in mm : 2.00 Speed rpm : 360...400 FUEL DELIVERY CHARACTERISTICS 1st version : 600 Speed rpm Del.quantity cm3/: 121.0...125.0 1000 s: (118.0...128.0) cm3 : 5.00 Spread 1000 s: (9.00) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 10.20 rpm : 1140...1150 Speed STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/: 170.0...190.0 1000 s: (166.0...194.0) Remarks: : ð.

Note remarks

Test sheet : MB 10,0 L 3 : 25.01.91 Edition

Replaces

Test oil : ISO-4113

Combination no. : 0 402 045 701

Injection pump

Pump designation : PES5P110A720LS3218

: 0 412 015 700 EP type number

Governor

Governor design. : RQ300/1100PA327-11

Governer no. : 0 421 801 458

Customer-spec, information

Customer : MERCEDES-BENZ

Engine : 0M449

1st version kW : 140.0 : 2200 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 0 681 343 009 assembly

Opening |

: 172...175 pressure, bar

Test lines : 1 680 750 015

Outside diameter x Wall thickness

: 6.00x1,50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 4.30...4.40 Prestroke mm : (4.25,..4.45)

Rack travel in mm : 9.00...12.00

: 1-3-5-4-2 Firing order

: 0-72-144-216-288 Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 5

BASIC SETTING

1st speed rpm: 1100

Rack travel in mm : 10.90...11.00

Del.quantity cm3/: 13.5...13.7

100 s: (13.2...13.9)

Spread cm3 : 0.4

100 s: (0.8)

2nd speed rpm : 300.0 Rack travel in mm : 7.0...7.4

Del.quantity cm3/: 1.2...1.8

100 s: (0.9...2.0)

cm3 : 0.4Spread

100 s: (0.7)

GUIDE SLEEVE POSITION

Control-lever position Degree: -1

rpm : 600

Rack trayel in mm : 13.00...14.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1100 Speed

: 135.0...137.0 Del.quantity

1000 : (132.5...139.5)

Spread cm3 : 4.00

1000 : (8.00)

RATED SPEED

1st version

Setting point:

: 600 Speed rom

Rack travel in mm: 13.5

Testing:

1st rack travel in: 9.90

Speed rpm : 1140...1150

2nd rack travel in: 4.00 Speed rpm: 1200...1230 4th rack travel in: 1300 Speed rpm : 0.00...1.50 LOW IDLE 1 Setting point w/out bumper spring Speed rpm : 300 Rack travel in mm : 7.2 Testing: rpm : 200 Speed Minimum rack trave: 9.40 Speed rpm: 300
Rack travel in mm: 7.00...7.40
Rack travel in mm: 2.00
Speed rpm: 360...400 FUEL DELIVERY CHARACTERISTICS 1st version : 600 Speed rpm Del.quantity cm3/: 109.0...113.0 1000 s: (106.0...116.0) Spread cm3 : 5.00 1000 s: (9.00) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 9.90 rpm : 1140...1150 Speed STARTING FUEL DELIVERY : 100 Speed rpm Del.quantity cm3/: 140.0...160.0 1000 s: (136.0...164.0) Remarks:

Note remarks

Test sheet : MB 10,0 l 1
Edition : 16.01.91
Replaces : 4.11.88
Test oil : ISO-4113

Combination no. : 0 402 045 701

Injection pump

Pump designation : PES5P110A820LS3218

EP type number : 0 412 015 700

Governor

Governor design. : RQ300/1100PA327-11

Governer no. : 0 421 801 458

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : 0M449

1st version kW : 140.0 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

assembly : 0 681 343 009

Opening

pressure, bar : 172...175

Test Lines : 1 680 750 015

Outside diameter x Wall thickness

x wall tilliciness

x Length mm : 6.00X1.50X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.30...4.40 : (4.25...4.45)

Rack travel in mm : 9.00...12.00

Firing order : 1-3-5-4-2

Phasing : 0-72-144-216-288

Tolerance + - * : 0.50 (0.75)

Time to cyl. no. : 5

BASIC SETTING

1st speed rpm: 1100

Rack travel in mm : 10.90...11.00

Del.quantity cm3/: 13.5...13.7

100 s: (13.2...13.9)

Spread cm3: 0.4

100 s: (0.8)

2nd speed rpm: 300.0

Rack travel in mm : 6.8...7.2

Del.quantity cm3/: 1.2...1.8 100 s: (0.9...2.0)

Spread cm3: 0.4

100 s: (0.7)

GUIDE SLEEVE POSITION

Control-lever position
Degree: -1

Speed rpm: 600

Rack travel in mm : 13.00...14.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del.quantity : 135.0...137.0 1000 : (132.5...139.5)

Spread cm3 : 4.00

1000 : (8.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600 Rack travel in mm : 13.5

Testing:

1st rack travel in: 9.90

Speed rpm : 1140...1150

2nd rack travel in: 4.00 rpm : 1200...1230 Speed 4th rack travel in: 1300 Speed rpm: 0.00...1.50 LOW IDLE 1 Setting point w/out bumper spring Speed rpm : 300 Rack travel in mm : 7.2 Testing: Speed rpm : 200 Minimum rack trave: 9.40 Speed rpm: 300 Rack travel in mm: 7.00...7.40 Rack travel in mm : 2.00 Speed rpm : 360...400 FUEL DELIVERY CHARACTERISTICS 1st version Speed rpm : 600 Del.quantity cm3/ : 109.0...113.0 1000 s: (106.0...116.0) cm3 : 5.00 1000 s: (9.00) Spread BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 9.90 rpm : 1140...1150 Speed STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/ : 140.0...160.0 1000 s: (136.0...164.0) Remarks:

Note remarks

: MB 10,0 u 2 Test sheet : 18.01.91 Edition

Replaces

Test oil

: ISO-4113

Combination no.

: 0 402 045 702

Injection pump

Pump designation : PESSP110A720LS3218

EP type number

: 0 412 015 700

Governor

Governor design.

: RQV300...1100PA916-2

Governer no.

: 0 421 813 750

Customer-spec. information

Customer

: MERCEDES-BENZ

Engine

: 0M449

1st version kW

: 140.0

Rated speed

: 2200

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C

: 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 0 681 343 009 assembly

Opening

: 172...175 pressure, bar

Test lines : 1 680 750 015

Outside diameter

x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.30...4.40 : (4.25...4.45)

Rack travel in mm : 9.00...12.00 Firing order : 1-3-5-4-2

: 0-72-144-216-288 Phasing

Tolerance $+ - ^{\circ} : 0.50 (0.75)$

Time to cyl. no. : 5

BASIC SETTING

1st speed rpm: 1100

Rack travel in mm : 10.40...10.50

Del.quantity cm3/: 13.5...13.7

100 s: (13.2...13.9)

Spread cm3 : 0.4

100 s: (0.8)

rpm : 300.0 2nd speed

Rack travel in mm: 6.8...7.2

Del.quantity cm3/: 1.2...1.8

100 s: (0.9...2.0) cm3 : 0.4

100 s: (0.7)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 300 1st speed

: 1.10...1.40 travel mm

2nd speed

Spread

rpm : 450 : 3.40...3.80

travel mm rpm : 1150 3rd speed

: 7.90...8.30 travel mm

: 1225 4th speed rpm

: 9.10...9.70 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1140

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del.quantity : 135.0...137.0

1000 : (132.5...139.5)

Spread cm3 : 4.001000 : (8.00) RATED SPEED 1st version Control Lever position degrees: 114...122 Testina: 1st rack travel in: 9.50 Speed rpm : 1140...1150 2nd rack travel in: 4.00 rpm : 1195...1220 Speed 4th rack travel in: 1250 rpm : 0.00...1.00 Speed LOW IDLE 1 Control lever position degrees: 85...93 Testing: Speed rpm : 200 Minimum rack trave: 9.00 Speed rpm : 300 Rack travel in mm : 6.80...7.20 CONSTANT REGULATION rpm : 300...500 Speed START CUT-OUT Speed 1/min : 220 (240) FUEL DELIVERY CHARACTERISTICS 1st version : 600 Speed rpm Del.quantity cm3/: 110.0...114.0 1000 s: (107.0...117.0) cm3 : 5.00 1000 s: (9.00) Spread BREAKAWAY 1st version 1mm rack travel less than

full load rack tr: 9.50 rpm : 1140...1150 Speed

STARTING FUEL DELIVERY

rpm : 100Speed Del.quantity cm3/: 140.0...160.0 1000 s: (136.0...164.0) Remarks:

E26

Note remarks

: MB 10,0 u 3 Test sheet : 18.01.91 Edition

Replaces

: ISO-4113 Test oil

Combination no. : 0 402 045 703

Injection pump

Pump designation : PES5P110A720LS3218

EP type number : 0 412 015 700

Governor

Governor design. : RQV300...1100PA916-3

: 0 421 813 751 Governer no.

Customer-spec. information

Customer : MERCEDES-BENZ

: 0M449 Engine

: 147.0 1st version kW : 2200 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter x Wall thickness

x Length mm : 6.00X1.50X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 4.30...4.40 : (4.25...4.45) Prestroke mm

Rack travel in mm : 9.00...12.00 Firing order : 1-3-5-4-2

: 0-72-144-216-288 Phasing

Tolerance $+ - \circ : 0.50 (0.75)$

Time to cyl, no. : 5

BASIC SETTING

rpm: 1100 1st speed

Rack travel in mm : 11.20...11.30

Del.guantity cm3/: 14.4...14.6

100 s: (14.1...14.8)

cm3 : 0.4Spread

100 s: (0.8)

rpm : 300.0 2nd speed Rack travel in mm: 6.8...7.2 Del.quantity cm3/: 1.2...1.8 100 s: (0.9...2.0)

cm3 : 0.4 Spread

100 s: (0.7)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

: 1.10...1.40 travel mm rpm : 450 2nd speed

: 3.40...3.80 : 1150 travel mm

3rd speed rpm

travel mm : 7.90...8.30

4th speed rpm : 1225 travel mm : 9.10...9.70

GUIDE SLEEVE POSITION Control-Lever position

Degree: -1

Speed rpm : 1140

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1100 Speed

Del.quantity : 144.0...146.0

1000 : (141.5...148.5)

cm3 : 4.00 1000 : (8.00) Spread

RATED SPEED

1st version Control lever position degrees: 114...122

Testing:

1st rack travel in: 10.20 Speed rpm : 1140...1150 2nd rack travel in: 4.00

rpm : 1190...1220 Speed 4th rack travel in: 1250 rpm : 0.00...1.00 Speed

LOW IDLE 1 Control lever position degrees: 85...93

Testing:

Speed rpm : 200 Minimum rack trave: 9.00 rpm : 300 Speed

Rack travel in mm : 6.80...7.20

CONSTANT REGULATION

rpm : 300...500 Speed

START CUT-OUT

1/min: 220 (240) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

rpm : 600 Speed

Del.quantity cm3/: 121.0...125.0 1000 s: (118.0...128.0)

cm3 : 5.00 Spread 1000 s: (9.00)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 10.20 rpm : 1140...1150 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 140.0...160.0 1000 s: (136.0...164.0)

Remarks:

Note remarks

Test sheet : DEE 7,7 g : 15.11.90 Edition Replaces : 2.10.90 : ISO-4113 Test oil

: 0 402 076 733 Combination no.

Injection pump

Pump designation : PES6P110A720RS3224 EP type number : 0 412 016 726

Governor

: RSV475...1050P2A534-Governor design.

: 0 421 833 313 Governer no.

Customer-spec. information

: JOHN DEERE Customer

Engine : 6101 AT 001

1st version kW : 170.0 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 457 413 010

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 101 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0.6

Test lines : 1 680 750 015

Outside diameter

x Wall thickness

: 6.00X3.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 3.35...3.45 : (3.30...3.50) Rack travel in mm : 10.50

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

rpm: 1050 1st speed

Rack travel in mm : 13.20...13.30

Del.quantity cm3/: 15.8...16.0

100 s: (15.6...16.2)

Spread cm3 : 0.4

100 s: (0.6)

rpm : 475.0 2nd speed

Rack travel in mm : 6.0...6.2 Del.quantity cm3/: 1.0...1.4

100 s: (0.8...1.7)

cm3 : 0.6Spread

100 s: (0.8)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

Speed rpm: 800 Rack travel in mm: 0.30...0.70

Governor spring pre-tension Click setting x : 3.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1050 Speed

Aneroid pressure h: 600

: 158.0...160.0 Del.quantity 1000 : (156.0...162.0)

: 4.00 cm3 Spread

1000 : (6.50)

RATED SPEED

1st version Control lever

position degrees: 33...41

Testing: 1st rack travel in: 12.20 rpm : 1090...1100 Speed 2nd rack travel in: 4.00 Speed rpm : 1130...1140 3rd rack travel in: 4.00 rpm : 1135...1165 Speed 4th rack travel in: 1250 rpm : 0.30...1.40 Speed LOW IDLE 1 Control Lever position degrees: 11...19 Setting point w/out bumper spring : 475 rpm Rack travel in mm: 5.6 Testing: Speed : 100 rom Minimum rack trave: 19.00 rpm : 475 Rack travel in mm : 6.00...6.20 TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1050 Rack travel in m: 13.20...13.30 2nd speed rpm : 600 Rack travel in m: 13.90...14.10 Aneroid/Altitude Compensator Test 1st version Setting : 500 Speed rpm hPa : 600 Pressure : 13.90...14.10 Rack travel mm Measurement 1/min: 500 Speed 1st pressure hPa : Rack travel in m: 11.60...11.80
2nd pressure hPa : 300
Rack travel in m: 13.40...13.50
3rd pressure hPa : 160 Rack travel in m: 12.00...12.40 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 600 rpm : 600 Del.quantity cm3/: 177.0...181.0

1000 s: (175.0...183.0)

rpm : 500

Del.quantity cm3/: 131.0...135.0 1000 s: (129.0...137.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 12.20 rpm : 1090...1100 Speed STARTING FUEL DELIVERY : 100 rom Del.quantity cm3/: 125.0...145.0 1000 s: (120.0...150.0) Rack travel in mm : 19.00...21.00 LOW IDLE rpm : 475 Speed Rack travel in mm : 6.00...6.20 Del.quantity cm3/: 10.5...14.5 1000 s: (8.0...17.0) Spread cm3 : 6.001000 s: (8.00) Remarks: : JOHN DEERE # RE39856 Starting/full-load transition speed from holding magnet = 450 1/min. Start-of-delivery mark 10.5° cam angle after start of delivery cyl. 1 Adjustment without torque-control spring retainer with 0,5 mm less control-rod travel. Increase in full-load delivery with torque-control spring retainer.

Speed

Aneroid pressure h: -

Note remarks

: SCA 14,0 h5 Test sheet : 23.01.91 Edition

Replaces

Test oil : ISO-4113

Combination no. : 0 402 648 860

Injection pump

Pump designation : PE8P120A920/4LS7125

EP type number : 0 412 628 833

Governor

Governor design. : RQV200...900PA795-11

Customer-spec. information Customer : SCANIA

Engine : DS 14

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Openina

: 207...210 pressure, bar

Test Lines : 1 680 750 015

Outside diameter x Wall thickness

: 6.00X1.50X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.00...5.10 Prestroke mm : (4.95...5.15)

Rack travel in mm : 9.00...12.00 Firing order : 1-2-7-3-6-8 4- 5-

: 0-45-90-135-180-225-Phasing

270-315

: 0.50 (0.75) Tolerance + - °

Time to cyl. no. : 1

BASIC SETTING

rpm: 700 1st speed

Rack travel in mm : 13.50...13.60

Del.quantity cm3/: 21.4...21.6

100 s: (21.1...21.9)

cm3 : 0.6 Spread

100 s: (0.9)

rpm : 300 2nd speed

Rack travel in mm: 4.5...5.1

Del.quantity cm3/: 1.5...1.9

100 s: (-)

cm3 : 0.3Spread 100 s: (0.6)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rom : 300 1st speed

travel mm : 1.40...1.80

2nd speed 350 rpm

1.90...2.50 travel mm

650 3rd speed man

4.80...5.20 travel mm

: 945 4th speed rpm

: 7.80...8.00 travel mm

5th speed : 1040 rpm

travel mm : 9.10...9.50

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1 Speed rpm : 1070

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 900

: 214.0...216.0 Del.quantity

1000 : (211.0...219.0)

: 6.00 Spread cm3

1000 : (9.00)

RATED SPEED

1st version Control lever

position degrees: 43...51

Testina:

1st rack travel in: 12.50 rpm : 940...950 Speed 2nd rack travel in: 4.00

Speed rpm: 1025...1055 4th rack travel in: 1150

rpm : 0.00...1.00 Speed

LOW IDLE 1 Control Lever

position degrees: 11...19

Testing:

Speed : 100 rpm Minimum rack trave: 11.00 : 300 rpm Rack travel in mm : 4.50...5.10

Rack travel in mm: 2.00 : 320...380 Speed rom

Aneroid/Altitude Compensator Test

1st version Setting

: 500 Speed rpm hPa : 900 Pressure

: 13.50...13.60 Rack travel mm

Measurement

 $1/\min : 500$ Speed

1st pressure hPa : -Rack travel in m: 11.30...11.40

2nd pressure hPa : 365

Rack travel in m: 12.80...12.90

3rd pressure hPa : 215

Rack travel in m: 11.90...12.10

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900 : 900 Speed rpm

Del.quantity cm3/: 204.0...212.0 1000 s: (202.0...214.0)

Aneroid pressure h: -

rpm : 500 Speed

Del.quantity cm3/: 158.0...162.0

1000 s: (156.0...164.0)

BREAKAWAY

F04

1st version 1mm rack travel less than

full load rack tr: 12.50 rpm : 940...950 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 240.0...290.0

1000 s: (-)

Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 300 Rack travel in mm : 4.50...5.10 Del.quantity cm3/: 15.0...19.0 1000 s: (-)

Remarks:

Delivery-valve spring pre-tension 3.2...3.4 mm.

Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring preload on new delivery-valve holders to 2.9...3.1 mm.

Note remarks

Test sheet : MB 14,7 u 1 Edition : 25.01.91 : 20.12.90 Replaces Test oil : ISO-4113

Combination no. : 0 402 648 901

Injection pump

Pump designation : PE8P120A320LS7840 : 0 412 628 850 EP type number

Governor

: RQV300...1050PA797-Governor design.

21

: 0 421 813 894 Governer no.

Customer-spec. information

: MERCEDES-BENZ Customer

: 0M442 A Engine

1st version kW : 250.0 : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 019 assembly

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter

x Wall thickness

: 6.00x1.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.20...5.30 Prestroke mm : (5.15...5.35)

Rack travel in mm : 20.00...21.00 Firing order : 8-7-2-6-3-5-Firing order

Phasing : 0-45-90-135-180-225-

270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm: 600

Rack travel in mm : 13.50...13.70

Del.guantity cm3/: 20.8...21.0

100 s: (20.5...21.3)

cm3 : 0.6Spread

100 s: (0.9)

2nd speed rpm : 300.0Rack travel in mm: 6.2...6.4

Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.5) cm3 : 0.6 Spread

100 s: (1.0)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 300 1st speed

travel mm : 1.10...1.60 2nd speed rpm : 470

: 3.00...3.50 travel mm

3rd speed rpm : 830

: 5.90...6.40 travel mm

rpm : 1110 4th speed

travel mm : 8.20...8.70

: 1183 5th speed rom

: 9.80...10.30 travel mm

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1 rpm : 1125

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP 3rd pressure hPa : 1050 Rack travel in m: 13.60...13.70 * 4th pressure hPa : 1120 1st version Rack travel in m: 14.10...14.30 Speed rpm : 600 Aneroid pressure h: 900 5th pressure hPa : -: 208.0...210.0 Del.quantity Rack travel in m: 10.40...10.70 1000 : (205.0...213.0) Spread : 6.00 START CUT-OUT cm3 1000 : (9.00) 1/min : 220 (240) Speed RATED SPEED FUEL DELIVERY CHARACTERISTICS 1st version Control Lever position degrees: 116...124 1st version Aneroid pressure h: 1400 rpm : 1050 Testina: Speed Del.quantity cm3/: 194.0...197.0 1000 s: (191.0...200.0) 1st rack travel in: 11.90 Speed rpm : 1090...1100 cm3 : 8.00 1000 s: (12.0) 2nd rack travel in: 4.00 Spread rpm : 1155...1185 Speed Aneroid pressure h: 1400 4th rack travel in: 1300 rpm : 0.00...1.00: 800 Speed rpm Del.quantity cm3/: 236.0...240.0 1000 s: (233.0...243.0) LOW IDLE 1 cm3 : 8.00Control Lever Spread 1000 s: (12.0) position degrees: 84...92 Aneroid pressure h: -Testing: : 500 rpm Del.quantity cm3/: 123.0...125.0 : 200 Speed rom Minimum rack trave: 7.90 1000 s: (120.0...128.0) cm3 : 8.00 rpm : 300 Spread Rack travel in mm : 6.10...6.70 1000 s: (12.0) CONSTANT REGULATION rpm : 300...450 Speed BREAKAWAY TORQUE CONTROL 1st version : 1050 1mm rack travel less than 2nd speed rpm Rack travel in m: 12.90...13.10 3rd speed rpm : 800 full load rack tr: 11.90 rpm : 1090...1108 Rack travel in m: 14.10...14.30 Speed Aneroid/Altitude STARTING FUEL DELIVERY Compensator Test : 100 Speed rpm Del.quantity cm3/: 180.0...200.0 1st version Setting 1000 s: (176.0...204.0) : 600 Speed rom hPa : 800 Pressure Remarks: Rack travel mm : 13.50...13.70 Measurement * Increase in control-rod travel with 1/min: 600 Speed respect to setting at least 0.1 mm 1st pressure hPa : 440 Rack travel in m: 11.30...11.50 2nd pressure hPa : 550

Rack travel in m: 12.30...12.50

Note remarks

: MB 14,7 v Test sheet Edition : 20.12.90

Replaces

Test oil : ISO-4113

Combination no. : 0 402 648 902

Injection pump

Pump designation : PE8P120A320LS7839 EP type number : D 412 628 849

Governor

Governor design. : RQ300/1050PA972-5

: 0 421 801 564 Governer no.

Customer-spec. information

: MERCEDES-BENZ Customer

Engine : 0M442 LA

: 370.0 1st version kW : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 019 assembly

Openina

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter

x Wall thickness

: 6.00X1.50X1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.00...5.10 Prestroke mm : (4.95...5.15)

Rack travel in mm : 20.00...21.00

: 8- 7- 2- 6- 3- 5-Firing order

Phasina : 0-45-90-135-180-225-

270-315

: 0.50 (0.75) Tolerance + - °

Time to cyl. no. : 8

BASIC SETTING

rpm: 600 1st speed

Rack travel in mm : 15.10...15.30

Del.guantity cm3/: 25.2...25.4

100 s: (24.9...25.7)

Spread cm3 : 0.6

100 s: (0.9)

rpm : 300.0 2nd speed

Rack travel in mm: 6.2...6.8 Del.quantity cm3/: 1.6...2.2 100 s: (1.3...2.5)

cm3 : 0.6Spread 100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position Degree: -2

rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 600 Speed Aneroid pressure h: 1050

: 252.0...254.0 Del.quantity 1000 : (249.0...257.0)

: 6.00 Spread cm3

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed : 600 rpm

Rack travel in mm: 20.0 Testina: 1st rack travel in: 15.00 Speed rpm : 1090...1105 2nd rack travel in: 4.00 Speed rpm : 1160...1190 4th rack travel in: 1250 rpm : 0.00...1.50Speed LOW IDLE 1 Setting point wout bumper spring : 300 rpm Rack travel in mm: 6.5 Testina: Speed : 200 rpm Minimum rack trave: 7.80 : 300 nom Rack travel in mm : 6.20...6.80 Rack travel in mm : 2.00 rpm : 380...420 Speed TORQUE CONTROL : 1050 2nd speed rom Rack travel in m: 16.00...16.20 3rd speed rpm : 800 Rack travel in m: 16.80...17.00 Aneroid/Altitude Compensator Test 1st version Setting : 600 Speed man Pressure hPa : 1000 Rack travel mm : 15.10...15.30 Measurement 1/min: 600 Speed 1st pressure hPa : 290 Rack travel in m: 9.70...9.90 2nd pressure hPa : 780 Rack travel in m: 14.20...14.40 3rd pressure hPa : 1200 Rack travel in m: 15.20...15.40 * 4th pressure hPa : 1380 Rack travel in m: 16.10...16.30 5th pressure hPa : -Rack travel in m: 9.30...9.60

FUEL DELIVERY CHARACTERISTICS

rpm : 1050

Aneroid pressure h: 1800

Del.quantity cm3/: 274.0...277.0 1000 s: (271.0...280.0) Spread cm3 : 8.00 1000 s: (12.0) Aneroid pressure h: 1800 : 800 rpm Del.quantity cm3/: 295.0...299.0 1000 s: (292.0...302.0) cm3 : 8.00Spread 1000 s: (12.0) Aneroid pressure h: -: 500 Speed mgn Del.quantity cm3/: 139.0...141.0 1000 s: (136.0...144.0) cm3 : 8.00 Spread 1000 s: (12.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 15.00 rpm : 1090...1105 Speed STARTING FUEL DELIVERY Speed rpm : 100 Remarks: * Increase in control-rod travel with respect to setting at least 0.1 mm Adjust full-load delivery by turning temperature-dependent excess-fuel stop for starting (TAS).

Speed

1st version

Note remarks

Test sheet : MB 14,7 a24 Edition : 30.11.90

Replaces

Test oil : ISU-4113

Combination no. : 0 402 648 903

Injection pump

Pump designation : PE8P120A320LS7801-1

EP type number : 0 412 628 818

Governor

Governor design. : RQV350...1050PA866-8

: 0 421 813 905 Governer no.

Customer-spec. information

Customer : MERCEDES-BENZ

: 0M442 A Engine

1st version kW : 260.0 : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

: 38...42 inlet temp. °C

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

assembly : 1 688 901 019

Openina

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter

x Wall thickness

: 6.00x1.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30 : (5.15...5.35)

Rack travel in mm : 20.00...21.00 Firing order : 8-7-2-6-3-5-

Phasina : 0-45-90-135-180-225-

270-315

: 0.50 (0.75) Tolerance + - °

Time to cyl. no. : 8

BASIC SETTING

rpm: 500 1st speed

Rack travel in mm : 13.90...14.10

Del.quantity cm3/: 20.1...20.3

100 s: (19.8...20.6)

cm3 : 0.5 Spread

100 s: (0.9)

2nd speed rpm : 350.0 Rack travel in mm : 5.5...6.1 Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.5)

cm3 : 0.6 Spread 100 s: (1.0)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 350 1st speed

travel mm : 1.30...1.80

2nd speed 570 rpm :

3.30...3.80 travel mm

rpm : 900 3rd speed

: 5.40...5.90 travel mm

4th speed rpm : 1107

travel mm : 7.80...8.30

rpm : 1204 5th speed

travel mm : 9.80...10.30

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1300

Rack travel in mm : 16.50...18.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 500 Speed Aneroid pressure h: 650

Del.quantity : 201.0...203.0

1000 : (198.0...206.0)

: 5.00 Spread cm3 1000 : (9.00)

RATED SPEED

1st version Control lever

position degrees: 115...123

Testing:

1st rack travel in: 11.90 Speed rpm : 1090...1100 2nd rack travel in: 4.00

rpm : 1160...1190 Speed

4th rack travel in: 1200

Speed rom : 0.00...1.00

LOW IDLE 1 Control Lever

position degrees: 59...67

Testing:

rom Speed Minimum rack trave: 8.20 rpm : 350

Rack travel in mm : 5.60...6.10

CONSTANT REGULATION

rpm : 350...550 Speed

TORQUE CONTROL

2nd speed rpm : 1050

Rack travel in m: 12.90...13.10

rpm : 700 3rd speed

Rack travel in m: 14.30...14.50

Aneroid/Altitude Compensator Test

1st version

Setting

: 600 Speed man hPa : 650 Pressure

Rack travel mm : 13.90...14.10

Measurement

1/min: 600 Speed

1st pressure hPa : 300

Rack travel in m: 12.20...12.40

2nd pressure hPa : 375 Rack travel in m: 13.30...13.50

3rd pressure hPa : 900

Rack travel in m: 14.00...14.10 *

4th pressure hPa : -

Rack travel in m: 11.70...12.00

START CUT-OUT

1/min : 270 (290) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1100 : 1050 Speed rpm

Del.quantity cm3/: 180.0...183.0

1000 s: (177.0...186.0)

cm3 : 8.00 Spread

1000 s: (12.)

Aneroid pressure h: 1100 : 700 rpm

Del.quantity cm3/: 213.0...217.0

1000 s: (210.0...220.0)

rpm_ : 500 Speed

Del.quantity cm3/: 147.0...149.0

1000 s: (144.0...152.0)

cm3 : 8.00 Spread 1000 s: (12.00

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.90

rpm : 1090...1100 Speed

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 180.0...200.0

1000 s: (176.0...204.0)

Remarks:

* Increase in control-rod travel with respect to setting at least 0.1 mm

Note remarks

: MB 14,7 a25 : 18.01.91 Test sheet Edition

Replaces

: ISO-4113 Test oil

Combination no. : 0 402 648 904

Injection pump

Pump designation : PE8P120A320LS7801-1

EP type number : D 412 628 818

Governor

Governor design. : RQV350...1050PA866-9

Governer no. : 0 421 813 906

Customer-spec. information

Customer : MERCEDES-BENZ

: OM442 LA Engine

1st version kW : 260.0 : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 019 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test Lines : 1 680 750 067

Outside diameter

x Wall thickness

: 6.00X1.50X1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30

(5.15...5.35)

Rack travel in mm : 20.00...21.00 Firing order : 8-7-2-6-3-5-

Phasing : 0-45-90-135-180-225-

270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 500

Rack travel in mm : 13.80...14.00

Del.quantity cm3/: 20.1...20.3

100 s: (19.8...20.6)

cm3 : 0.5Spread

100 s: (0.9)

2nd speed rpm : 350.0 Rack travel in mm : 5.7...5.9 Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm3 : 0.6100 s: (1.0)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 350 1st speed : 1.30...1.80 travel mm

rpm : 570 2nd speed

: 3.30...3.80 rpm : 900 travel mm

3rd speed

: 5.40...5.90 travel mm

rpm : 1107 4th speed

: 7.80...8.30 travel mm

: 1204 5th speed rpm

: 9.80...10.30 travel mm

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1 rpm : 1130 Speed

Rack travel in mm : 16.50...18.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version rpm : 500 Speed Aneroid pressure h: 700 Del.quantity : 201.0...203.0 1000 : (198.0...206.0) Spread cm3 : 5.00 1000 : (9.00) Speed RATED SPEED 1st version Control Lever position degrees: 95...103 Speed Testina: 1st rack travel in: 11.90 rpm : 1090...1100 Speed Spread 2nd rack travel in: 4.00 rpm : 1160...1190 Speed 4th rack travel in: 1300 Speed rpm : 0.00...1.50Speed LOW IDLE 1 Spread Control lever position degrees: 45...53 Speed Testing: rpm : 100 Speed Minimum rack trave: 7.40 Spread rpm Rack travel in mm : 5.50...6.10 CONSTANT REGULATION rpm : 350...550 Speed TORQUE CONTROL Dimension a mm : 1.50 2nd speed rpm : 1050 Rack travel in m: 12.80...13.00 Speed 3rd speed rpm : 750 Rack travel in m: 14.30...14.50 Aneroid/Altitude Compensator Test Speed 1st version Setting : 600 Speed rpm Pressure hPa : 700 Rack travel mm : 13.70...14.00 Measurement Speed 1/min: 600 1st pressure hPa : 400 Rack travel in m: 12.10...12.30 2nd pressure hPa : 500

3rd pressure hPa : 925 Rack travel in m: 13.90...14.00 4th pressure hPa : -Rack travel in m: 11.60...11.90 START CUT-OUT 1/min: 270 (290) FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1100 : 1050 rpm Del.quantity cm3/: 181.0...184.0 1000 s: (178.0...187.0) cm3 : 8.00 1000 s: (12.0) Aneroid pressure h: 1100 rpm : 750 Del.quantity cm3/: 213.0...217.0 1000 s: (210.0...220.0) cm3 : 8.00 1000 s: (12.0) Aneroid pressure h: rpm Del.quantity cm3/: 143.0...145.0 1000 s: (140.0...148.0) cm3 : 8.00 1000 s: (12.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 11.90 rpm : 1090...1100 STARTING FUEL DELIVERY : 100 rpm Del.quantity cm3/: 220.0...240.0 1000 s: (216.0...244.0) Remarks:

Rack travel in m: 13.00...13.20

Note remarks

: MB 14,7 a26 Test sheet : 25.01.91 Edition

Replaces

Test oil : ISO-4113

Combination no. : 0 402 648 905

Injection pump

Pump designation : PE8P120A320LS7801-4

EP type number

: 0 412 628 839

Governor

: RQV350...1050PA866-Governor design.

10

: 0 421 813 907 Governer no.

Customer-spec. information

: MERCEDES-BENZ Customer

: 0M442 LA Engine

1st version kW : 260.0 : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 019 assembly

Opening |

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter

x Wall thickness

: 6.00x1.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.20...5.30 : (5.15...5.35) Prestroke mm

Rack travel in mm : 20.00...21.00 Firing order : 8-7-2-6-3-5-

Phasing : 0-45-90-135-180-225-

270-315

: 0.50 (0.75) Tolerance + - °

Time to cyl. no. : 8

BASIC SETTING

Spread

rpm:5001st speed

Rack travel in mm : 13.80...14.00

Del.quantity cm3/: 20.1...20.3

100 s: (19.8...20.6)

cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 350.0 Rack travel in mm : 5.7...5.9 Del.quantity cm3/ : 1.6...2.2 100 s: (1.3...2.5)

cm3 : 0.6

Spread 100 s: (1.0)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350

: 1.30...1.80 travel mm 2nd speed 570 rpm

3.30...3.80 travel mm

: 900 3rd speed rpm

: 5.40...5.90 travel mm

: 1107 4th speed rpm

travel mm : 7.80...8.30

: 1204 5th speed rpm

: 9.80...10.30 travel mm

GUIDE SLEEVE POSITION Control-lever position

Speed

Degree: -1

rpm : 1130

Rack travel in mm : 16.50...18.00

Rack travel in m: 13.00...13.20 FULL LOAD DELIV. AT FULL LOAD STOP 3rd pressure hPa : 925 1st version Rack travel in m: 13.90...14.00 Speed rpm : 500
Aneroid pressure h: 700
Del.quantity : 201.0...203.0 4th pressure hPa : -Rack travel in m: 11.60...11.90 1000 : (198.0...206.0) START CUT-OUT cm3 : 5.00 Spread 1000 : (9.00) Speed 1/min: 270 (290) RATED SPEED FUEL DELIVERY CHARACTERISTICS 1st version Control Lever 1st version Aneroid pressure h: 1100 position degrees: 95...103 : 1050 Speed rpm Del.quantity cm3/: 181.0...184.0 1000 s: (178.0...187.0) Testing: 1st rack travel in: 11.90 Speed rpm : 1090...1100 cm3 : 8.00 Spread 2nd rack travel in: 4.00 1000 s: (12.0) rpm : 1160...1190 Aneroid pressure h: 1100 Speed rpm : 750 4th rack travel in: 1300 Speed rpm : 0.00...1.50 Del.quantity cm3/: 213.0...217.0 1000 s: (210.0...220.0) Speed LOW IDLE 1 cm3 : 8.00 Spread 1000 s: (12.0) Control Lever position degrees: 45...53 Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/ : 143.0...145.0 Testing: 1000 s: (140.0...148.0) Speed rpm : 100 Minimum rack trave: 7.40 cm3 : 8.00Spread Speed rpm : 350 Rack travel in mm : 5.50...6.10 1000 s: (12.0) **BREAKAWAY** CONSTANT REGULATION rpm : 350...550 Speed 1st version TORQUE CONTROL 1mm rack travel less than Dimension a mm : 1.50 2nd speed rpm : 1050
Rack travel in m: 12.80...13.00
3rd speed rpm : 750 full load rack tr: 11.90 rpm : 1090...1100 Speed Rack travel in m: 14.30...14.50 STARTING FUEL DELIVERY Aneroid/Altitude Compensator Test rpm : 100 Speed Del.quantity cm3/: 220.0...240.0 1000 s: (216.0...244.0) 1st version Setting Remarks: rpm Speed : 600 Pressure hPa : 700 Rack travel mm : 13.70...14.00 Measurement 1/min: 600 Speed 1st pressure hPa : 400 Rack travel in m: 12.10...12.30 2nd pressure hPa : 500

Note remarks

: MB 14,7 ₩ Test sheet : 16.01.91 Edition

Replaces

: ISO-4113 Test oil

Combination no. : 0 402 648 906

Injection pump

Pump designation : PE8P120A320LS7838 : 0 412 628 848

EP type number

Governor

Governor design. : RQ300/1050PA972-6

Governer no. : 0 421 801 569

Customer-spec. information

: MERCEDES-BENZ Customer

: 0M442 A Engine

: 320.0 1st version kW : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

assembly : 1 688 901 105

0pening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0.8

Test lines : 1 680 750 075

Outside diameter

x Wall thickness

: 8.00x2.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.20...5.30 Prestroke mm

: (5.15...5.35)

Rack travel in mm : 20.00...21.00

: 8-7-2-6-3-5-Firing order

Phasing : 0-45-90-135-180-225-

270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

rpm: 600 1st speed

Rack travel in mm : 14.00...14.20

Del.quantity cm3/: 22.1...22.3

100 s: (21.8...22.6)

cm3 : 0.6Spread

100 s: (0.9)

rpm : 300.02nd speed

Rack travel in mm: 6.2...6.8 Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.5)

Spread cm3 : 0.6

100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position Degree: -2

rpm : 1020

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

Speed rpm : 600

Aneroid pressure h: 900

: 221.0...223.0 Del.quantity 1000 : (218.0...226.0)

: 6.00 Spread cm3

1000 : (9.00)

RATED SPEED

1st version

Setting point:

: 1020 Speed rpm

Rack travel in mm : 20.0 Testing: 1st rack travel in: 13.40 rpm : 1090...1105 Speed 2nd rack travel in: 4.00 Speed rpm : 1165...1195 4th rack travel in: 1250 rom : 0.00...1.50Speed LOW IDLE 1 Setting point w/out bumper spring : 300 rpm Rack travel in mm: 6.5 Testing: : 200 Speed rpm Minimum rack trave: 7.80 rpm : 300 Rack travel in mm : 6.20...6.80 CONSTANT REGULATION rpm : 300...500 Speed TORQUE CONTROL Dimension a mm rpm : 1050 2nd speed Rack travel in m: 14.40...14.60 3rd speed rpm : 800 Rack travel in m: 14.80...15.00 Aneroid/Altitude Compensator Test 1st version Setting Speed : 600 rpm hPa : 900 Pressure : 14.10...14.30 Rack travel mm Measurement 1/min: 600 Speed 1st pressure hPa : 350 Rack travel in m: 9.90...10.10 2nd pressure hPa : 650 Rack travel in m: 12.50...12.70 3rd pressure hPa : 1100 Rack travel in m: 14.20...14.40 *

Del.quantity cm3/: 227.0...230.0 1000 s: (224.0...233.0) cm3 : 8.00Spread 1000 s: (12.0) Aneroid pressure h: 1500 Speed rpm : 800 Del.quantity cm3/: 237.0...240.0 1000 s: (234.0...243.0) cm3 : 8.00 Spread 1000 s: (12.0) Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/ : 137.0...139.0 1000 s: (134.0...142.0) cm3 : 8.00 Spread 1000 s: (12.0) BREAKAWAY 1st version 1mm rack travel less than

full load rack tr: 13.40 Speed rpm : 1090...1105

STARTING FUEL DELIVERY

Speed rpm: 100

Remarks:

* Increase in control-rod travel with respect to setting at least 0.1 mm

Adjust full-load delivery by turning temperature-dependent excess-fuel stop for starting (TAS).

Speed

1st version

4th pressure hPa : -

Rack travel in m: 9.10...9.40

rpm : 950

FUEL DELIVERY CHARACTERISTICS

Aneroid pressure h: 1500

Note remarks

: MB 14,7 v 1 Test sheet Edition : 16.01.91

Replaces

Test oil

: ISO-4113

Combination no.

: 0 402 648 907

Injection pump

Pump designation : PE8P120A320LS7839

EP type number

: 0 412 628 849

Governor

Governor design. : RQV300...950PA797-22

Governer no.

: 0 421 813 909

Customer-spec. information

Customer

: MERCEDES-BENZ

Engine

: 0M442 LA

1st version kW

Rated speed

: 370.0

: 1900

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C

: 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

assembly

: 1 688 901 019

Openina

pressure, bar

: 207...210

Orifice plate diameter mm : 0,8

Test lines

: 1 680 750 067

Outside diameter

x Wall thickness

x Length mm

: 6.00x1.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm

: 5.00...5.10

: (4.95...5.15)

Rack travel in mm : 20.00...21.00

Firing order

: 8-7-2-6-3-5-

Phasing

: 0-45-90-135-180-225-

270-315

Tolerance + - °

: 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed

rpm: 600

Rack travel in mm : 15.10...15.30

Del.guantity cm3/: 25.2...25.4

100 s: (24.9...25.7)

Spread

cm3 : 0.6

100's: (0.9)

2nd speed rpm : 300.0 Rack travel in mm : 6.2...6.8

Del.quantity cm3/: 1.6...2.2 100 s: (1.3...2.5)

Spread cm3 : 0.6

100 s: (1.0)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

1.00...1.50 travel mm

2nd speed man : 617

: 5.00...5.50 travel mm

: 780 3rd speed rpm

travel mm : 6.10...6.60

4th speed rpm : 1010

travel mm

: 8.30...8.80 : 1092

5th speed rpm

: 9.80...10.30 travel mm

GUIDE SLEEVE POSITION Control-lever position

Speed

Degree: -1

rpm : 1020

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version rpm : 600 Speed Aneroid pressure h: 1000 : 252.0...254.0 Del.quantity 1000 : (249.0...257.0) : 6.00 cm3 Spread 1000 : (9.00) RATED SPEED 1st version Control Lever position degrees: 118...126 Testing: 1st rack travel in: 15.50 Speed rpm : 990...1000 2nd rack travel in: 4.00 rpm : 1075...1105 Speed 4th rack travel in: 1150 rom : 0.00...1.00Speed LOW IDLE 1 Control lever position degrees: 82...90 Testing: Speed rpm Minimum rack trave: 7.80 : 300 rpm Rack travel in mm : 6.20...6.80CONSTANT REGULATION rpm : 300...500 Speed Aneroid/Altitude Compensator Test 1st version Setting : 600 Speed rpm Pressure hPa : 290 : 9.70...9.90 Rack travel mm Measurement Speed $1/\min : 600$ 1st pressure hPa : 760 Rack travel in m: 14.30...14.50 2nd pressure hPa : 1200 Rack travel in m: 15.30...15.50 3rd pressure hPa : 1500 Rack travel in m: 16.60...16.30 START CUT-OUT

1/min : 240 (260)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1800 Speed : 950 rpm

Del.quantity cm3/: 290.0...293.0 1000 s: (287.0...296.0)

Spread cm3 : 8.00

1000 s: (12.0) Aneroid pressure h: 1800

Speed rpm : 800

Del.quantity cm3/: 295.0...299.0 1000 s: (292.0...302.0)

cm3 : 8.00Spread 1000 s: (12.0) Aneroid pressure h: -

: 500 Speed rpm

Del.quantity cm3/: 139.0...141.0 1000 s: (136.0...144.0)

cm3 : 8.00 Spread 1000 s: (12.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 15.50 rpm : 990...1000 Speed

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 210.0...230.0

1000 s: (206.0...234.0)

Remarks:

F18

Speed

Note remarks

Test sheet : MB 14,7 w 1 : 16.01.91 Edition

Replaces

: ISO-4113 Test oil

Combination no. : 0 402 648 908

Injection pump

Pump designation : PE8P120A320LS7838 EP type number : 0 412 628 848

Governor

Governor design. : RQV300...950PA797-23

: 0 421 813 910 Governer no.

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : 0M442 A

: 320.0 1st version kW : 1900 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 019 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test Lines : 1 680 750 067

Outside diameter x Wall thickness

: 6.00x1.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30

: (5.15...5.35)

Rack travel in mm : 20.00...21.00

: 8- 7- 2- 6- 3- 5-Firing order

Phasina : 0-45-90-135-180-225-

270-315

: 0.50 (0.75) Tolerance + - °

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm: 600

Rack travel in mm : 14.60...14.80

Del.quantity cm3/: 22.2...22.4

100 s: (21.9...22.7)

cm3 : 0.6Spread

100 s: (0.9)

rpm : 300.0 2nd speed Rack travel in mm: 6.2...6.8

Del.quantity cm3/: 1.6...2.2 100 s: (1.3...2.5)

cm3 : 0.6Spread 100 s: (1.0)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 300 1st speed

: 1.00...1.50 travel mm rpm : 617 2nd speed

travel mm : 5.00...5.50

3rd speed rpm : 780

: 6.10...6.60 travel mm 4th speed rpm : 1009

: 8.30...8.80 travel mm

5th speed rpm : 1092

: 9.80...10.30 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1020 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1/min : 240 (260) Speed 1st version rpm : 600 Speed FUEL DELIVERY CHARACTERISTICS Aneroid pressure h: 900 : 222.0...224.0 Del.quantity 1000 : (219.0...227.0) 1st version : 6.00 Aneroid pressure h: 1400 стЗ Spread : (9.00) : 950 1000 Speed rpm Del.quantity cm3/: 243.0...245.0 1000 s: (240.0...248.0) RATED SPEED cm3 : 8.00 Spread 1000 s: (12.0) 1st version Control lever Aneroid pressure h: 1400 position degrees: 117...125 Speed : 800 rom Del.quantity cm3/: 255.0...259.0 1000 s: (252.0...262.0) Spread cm3: 8.00 Testing: 1st rack travel in: 13.40 1000 s: (12.0) Speed rpm : 990...1000 2nd rack travel in: 4.00 Aneroid pressure h: rom : 1075...1105 : 500 Speed Speed rpm Del.quantity cm3/: 125.0...127.0 1000 s: (122.0...130.0) 4th rack travel in: 1200 Speed rpm : 0.00...1.00 cm3 : 8.00 1000 s: (12.0) Spread LOW IDLE 1 Control lever position degrees: 82...90 **BREAKAWAY** Testing: Speed 1st version rom Minimum rack trave: 7.80 1mm rack travel less than : 300 Speed rom Rack travel in mm : 6.20...6.80 full load rack tr: 13.40 rpm : 990...1000 Speed CONSTANT REGULATION rpm : 300...500 Speed STARTING FUEL DELIVERY Aneroid/Altitude Compensator Test : 100 rpm Del.quantity cm3/: 210.0...230.0 1000 s: (206.0...234.0) 1st version Setting Remarks: : 600 Speed rpm hPa : 900 Pressure : 14.60...14.80 Rack travel mm Measurement Speed $1/\min : 600$ 1st pressure hPa : 300 Rack travel in m: 10.60...10.80 2nd pressure hPa : 600 Rack travel in m: 14.00...14.20 3rd pressure hPa : 1100 Rack travel in m: 14.90...15.10 4th pressure hPa : 1200 Rack travel in m: 15.50...15.70

START CUT-OUT

Note remarks

Test sheet : MB 21,9 j 1 : 30.11.90 Edition : 19.6.90 Replaces : ISO-4113 Test oil

Combination no. : 0 402 670 804

Injection pump

Pump designation : PE12P120A320LS7813-1

EP type number : 0 412 620 811

Governor

Governor design. : RSV350...750P0A825-5

: 0 421 833 277 Governer no.

Customer-spec. information

Customer : DAIMLER-BENZ

Engine : OM 444 LA

: 441.0 1st version kW : 1500 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 150...170

Test nozzle holder

: 1 688 901 105 assembly

Openina

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

: 1 680 750 075 Test Lines

Outside diameter x Wall thickness

: 8.00x2.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values __

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.20...5.30 Prestroke mm

: (5.15...5.35)

Rack travel in mm : 19.00...21.00 Firing order : 12-1-5-9-8-3-4-11-10-2-6-7

: 0-45-60-105-120-165-Phasing

180-225-240-285-300-

345

: 0.50 (0.75) Tolerance + - °

Time to cyl. no. : 12

BASIC SETTING

rpm: 700 1st speed

Rack travel in mm : 16.50...16.60

Del.quantity cm3/: 27.9...28.1

100 s: (27.6...28.4)

cm3 : 0.5Spread

100 s: (0.9)

2nd speed rpm : 350.0

Rack travel in mm : 5.5...5.9 Del.quantity cm3/ : 1.4...2.0 100 s: (1.1...2.3)

Spread cm3 : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3 rpm : 800 Speed

Rack travel in mm : 0.30...1.40

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 700 Speed

: 279.0...281.0 Del.quantity

1000 : (276.0...284.0)

: 5.00 Spread cm3

1000 : (9.00)

RATED SPEED

1st version

Control Lever

position degrees: 20...28

Testing:

1st rack travel in: 15.50 Speed rpm : 750...755

2nd rack travel in: 4.00

Speed rpm : 775...788

4th rack travel in: 900

Speed rpm : 0.30...1.70

LOW IDLE 1 Control lever

position degrees: 9...17

Setting point w/out bumper spring

Speed rpm : 350 Rack travel in mm : 5.7 Speed rpm : 350

Speed rpm : 350 Rack travel in mm : 5.50...5.90

SET IDLE AUXILIARY SPRING Rack travel in mm : 2.00

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 13.10 Speed rpm : 750...755

STARTING FUEL DELIVERY

Speed rpm: 100

Del.quantity cm3/: 265.0...285.0

1000 s: (261.0...289.0)

Remarks:

:

Observe VDT-I-420/120

APPLICATION

Generator

Note remarks

Test sheet : MAN 10.0 c : 01.02.91 Edition : 31.7.90 Replaces : ISO-4113 Test oil

Combination no. : 0 402 735 800

Injection pump

Pump designation : PES5P120A720/3LS7210

EP type number : 0 412 725 808

Governor

Governor design. : RQV325...1000PA962K

Governer no. : 0 421 815 246

Customer-spec. information Customer : MAN

: D2865LF03 Engine

: 235.0 1st version kW : 2000 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 105 assembly

Opening |

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 015

Outside diameter x Wall thickness

: 6.00X1.50X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 4.80...4.90 Prestroke mm

: (4.75...4.95)

Rack travel in mm : 15.00...16.00 : 1-3-5-4-2 Firing order

: 0-72-144-216-288 Phasing

Tolerance $+ - ^{\circ} : 0.50 (0.75)$

Time to cyl. no. : 5

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 4.40...4.60 & maximum rack tra: 15.0...16.0 Difference ° CS : 1.75...3.25

BASIC SETTING

rpm: 1000 1st speed

Rack travel in mm : 12.90...13.00

Del.quantity cm3/: 24.4...24.6

100 s: (24.1...24.9)

Spread cm3 : 0.6

rpm : 325.0 2nd speed Rack travel in mm: 5.9...6.3 Del.quantity cm3/: 4.7...5.3

100 s: (4.4...5.6)

cm3 : 1.0 Spread 100 s: (1.4)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1045

7.70...7.90 travel mm

2nd speed rpm

: 325 : 2.10...2.30 travel mm

rpm : 500 3rd speed

travel mm : 4.10...4.50

rpm : 900 4th speed

travel mm : 6.40...6.80

: 1350 5th speed rom

: 13.00...14.00 travel mm

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1 rpm : 1140 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

2nd pressure hPa : 170 Rack travel in m: 9.60...9.70 1st version rpm : 1000 Speed 3rd pressure hPa : 600 Aneroid pressure h: 1200 Rack travel in m: 12.10...12.30 Del.quantity : 244.0...249.0) START CUT-OUT Spread cm3 : 6.001/sin : 245 (265) Speed RATED SPEED FUEL DELIVERY CHARACTERISTICS 1st version Control lever position degrees: 283...291 1st version Aneroid pressure h: 1200 rpm : 900 Testing: Speed Del.quantity cm3/: 261.0...265.0 1000 s: (258.0...268.0) Ameroid pressure h: 1200 1st rack travel in: 11.90 Speed rpm : 1040...1050 2nd rack travel in: 4.00 rpm : 1130...1160 rpm : 650 Speed Speed Del.quantity cm3/: 264.0...270.0 1000 s: (261.0...273.0) 4th rack travel in: 1350 Speed rom : 0.00...1.00 : 650 rom Del.quantity cm3/: 90.0...100.0 1000 s: (87.0...103.0) LOW IDLE 1 Control Lever cm3 : 10.00 position degrees: 240...248 Spread 1000 s: (14.0) Testing: Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/ : 159.0...161.0 speed rpm : 100 Minimum rack trave: 7.50 1000 s: (156.0...164.0) rpm : 325 Rack travel in mm : 6.00...6.20 BREAKAWAY CONSTANT REGULATION rpm : 340...450 Speed 1st version TORQUE CONTROL 1mm rack travel less than Dimension a mm :? Torque control curve - 1st version full load rack tr: 11.90 1st speed rpm : 1000 Rack travel in m: 12.90...13.00 rpm : 1040...1050 Speed rpm : 900 2nd speed STARTING FUEL DELIVERY Rack travel in m: 13.30...13.50 3rd speed rpm : 650 Rack travel in m: 12.60...12.80 rpm : 100 Speed Del.quantity cm3/: 180.0...200.0 1000 s: (176.0...204.0) Aneroid/Altitude Compensator Test LOW IDLE Speed rpm : 325
Rack travel in mm : 5.90...6.30
Del.quantity cm3/: 47.0...53.0
1000 s: (44.0...56.0)
Spread cm3 : 10.00
1000 s: (14.00) 1st version Setting : 900 Speed rom hPa : 1200 Pressure : 13.20...13.50 Rack travel mm Measurement Speed 1/min: 900 Remarks: : MAN-NR. 3-7048 1st pressure hPa : -Rack travel in m: 9.20...9.40 Setting and blocking of pointer of

start-of-delivery sensor on cyl. 5 start of delivery

Note remarks

Test sheet : MAN 10,0 c1 : 01.02.91 Edition : 6.7.90 Replaces Test oil : ISO-4113

Combination no. : 0 402 735 801

Injection pump

Pump designation : PES5P120A720/3LS7210

EP type number : 0 412 725 808

Governor

Governor design. : RQV325...1000PA960K

Governer no. : 0 421 815 247

Customer-spec. information : MAN Customer

Engine : D2865LF03

: 235.0 1st version kW : 2000 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 105 assembly

Opening.

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 015

Outside diameter x Wall thickness

x Length mm : 6.00x1.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 4.80...4.90 : (4.75...4.95) Prestroke mm

Rack travel in mm : 15.00...16.00

Firing order : 1- 3- 5- 4- 2

: 0-72-144-216-288 Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 5

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 4.40...4.60 & maximum rack tra: 15.0...16.0

Difference ° CS : 1.75...3.25

BASIC SETTING

rpm: 1000 1st speed

Rack travel in mm : 12.90...13.00

Del.quantity cm3/: 24.4...24.6

100 s: (24.1...24.9)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 325.0 2nd speed Rack travel in mm: 6.0...6.4

Del.quantity cm3/: 4.7...5.3 100 s: (4.4...5.6)

cm3 : 0.8Spread 100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 1045 1st speed

: 9.40...9.60 travel mm : 325 2nd speed rpm

travel mm : 1.30...1.50

3rd speed 500 rpm

travel mm : 3.20...3.80

rpm : 900 4th speed : 7.60...8.00 travel mm

: 1350 5th speed rpm

travel mm : 13.00...14.00

GUIDE SLEEVE POSITION Control-lever position

Degree: -1 rpm : 1110

Speed Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed rpm : 1000 Aneroid pressure h: 1200 Del.quantity : 244.0246.0 1000 : (241.0249.0) Spread cm3 : 5.00 1000 : (9.00)	1st pressure hPa : - Rack travel in m: 9.209.40 2nd pressure hPa : 170 Rack travel in m: 9.609.70 3rd pressure hPa : 600 Rack travel in m: 12.1012.30 START CUT-OUT Speed 1/min : 245 (265)
RATED SPEED	+
1st version Control lever position degrees: 293301 Testing: 1st rack travel in: 11.90 Speed rpm: 10401050 2nd rack travel in: 4.00 Speed rpm: 11351165 4th rack travel in: 1350 Speed rpm: 0.001.00	FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1200 Speed rpm: 900 Del.quantity cm3/: 261.0265.0 1000 s: (258.0268.0) Aneroid pressure h: 1200 Speed rpm: 650 Del.quantity cm3/: 264.0270.0 1000 s: (261.0273.0) Speed rpm: 650
LOW IDLE 1 Control lever position degrees: 249257	Del.quantity cm3/: 90.0100.0 1000 s: (87.0103.0) Spread cm3 : 10.00 1000 s: (-)
Testing: Speed rpm : 100 Minimum rack trave: 7.70 Speed rpm : 325 Rack travel in mm : 6.106.30	Aneroid pressure h: - Speed rpm : 500 Del.quantity cm3/: 159.0161.0 1000 s: (156.0164.0)
CONSTANT REGULATION Speed rpm : 340450	BREAKAWAY
TORQUE CONTROL Dimension a mm : ?	1st version 1mm rack travel less than
Torque control curve - 1st version 1st speed rpm : 1000 Rack travel in m: 12.9013.00 2nd speed rpm : 900	full load rack tr: 11.90 Speed rpm: 10401050 STARTING FUEL DELIVERY
Rack travel in m: 13.3013.50 3rd speed rpm : 650	+
Rack travel in m: 12.6012.80 Aneroid/Altitude Compensator Test	Speed rpm : 100 Del.quantity cm3/: 180.0200.0 1000 s: (176.0204.0)
	LOW IDLE
1st version Setting Speed rpm : 900 Pressure hPa : 1200 Rack travel mm : 13.3013.50	Speed rpm: 325 Rack travel in mm: 6.006.40 Del.quantity cm3/: 47.053.0 1000 s: (44.056.0) Spread cm3: 8.00 1000 s: (12.00)
Measurement Speed 1/min: 900	Remarks:

: MAN-NR. 3-7049

Setting and blocking of pointer of start-of-delivery sensor on cyl. 5 start of delivery

Note remarks

Test sheet : MAN 10,0 c2 Edition : 01.02.91

Replaces

: ISO-4113 Test oil

Combination no. : 0 402 735 802

Injection pump

Pump designation : PES5P120A720/3LS7210

EP type number : 0 412 725 808

Governor

: RQV325...1000PA962-2 Governor design.

: 0 421 815 269 Governer no.

Customer-spec. information

: MAN Customer

: D2865LF06/LU06 Engine

1st version kW : 235.0 : 2000 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 1 688 901 105

Openina

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 015

Outside diameter x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.80...4.90

: (4.75...4.95)

Rack travel in mm : 15.00...16.00

Firing order

: 1-3-5-4-2

: 0-72-144-216-288 Phasing

Tolerance $+ - ^{\circ} : 0.50 (0.75)$

Time to cyl. no. : 5

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 4.40...4.60 & maximum rack tra: 15.0...16.0 Difference ° CS : 1.75...3.25

BASIC SETTING

1st speed rpm : 900

Rack travel in mm : 13.50...13.60

Del.quantity cm3/: 26.9...27.1

100 s: (26.6...27.4)

cm3 : 0.5Spread

100 s: (0.9)

2nd speed rpm : 325.0 Rack travel in mm : 5.9...6.3

Del.guantity cm3/: 4.7...5.3

100 s: (4.4...5.6)

cm3 : 1.0 Spread 100 s: (1.4)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1045

: 8.30...8.50 travel mm rpm : 325 2nd speed travel mm : 2.00...2.20

3rd speed

rpm : 500 : 4.00...4.60 travel mm

rpm : 900 4th speed

: 6.40...6.80 travel mm

rpm : 1350 5th speed

: 13.00...14.00 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1140 Speed

Rack travel in mm: 15.20...17.80 Measurement 1/min: 900 FULL LOAD DELIV. AT FULL LOAD STOP Speed 1st version 1st pressure hPa : -Rack travel in m: 9.20...9.40 rpm : 900 Speed 2nd pressure hPa : 170 Rack travel in m: 9.60...9.70 Aneroid pressure h: 1200 : 269.0...271.0 Del.quantity 1000 : (266.0...274.0) 3rd pressure hPa : 600 : 5.00 Rack travel in m: 12.00...12.40 Spread cm3 1000 : (9.00) START CUT-OUT RATED SPEED 1/min : 245 (265) Speed 1st version FUEL DELIVERY CHARACTERISTICS Control lever position degrees: 283...291 Testing: 1st version 1st rack travel in: 12.10 Aneroid pressure h: 1200 rpm : 1040...1050 rpm : 1000 Speed Del.quantity cm3/: 248.0...254.0 1000 s: (245.0...257.0) Aneroid pressure h: 1200 2nd rack travel in: 4.00 Speed rpm: 1130...1160 4th rack travel in: 1350 rpm : 0.00...1.00: 650 Speed Speed rpm Del.quantity cm3/: 270.0...276.0 1000 s: (267.0...279.0) LOW IDLE 1 Control lever Speed : 650 rpm Del.quantity cm3/: 90.0...100.0 1000 s: (87.0...103.0) Spread cm3 : 10.00 position degrees: 240...248 Testing: Speed : 100 1000 s: (14.0) man Minimum rack trave: 7.60 Aneroid pressure h: rpm : 500 : 325 Speed rom Del.quantity cm3/: 159.0...161.0 1000 s: (156.0...164.0) Rack travel in mm : 6.00...6.20 CONSTANT REGULATION rpm : 340...450 Speed BREAKAWAY TORQUE CONTROL Dimension a mm :? 1st version Torque control curve - 1st version 1mm rack travel less than 1st speed rpm : 900 Rack travel in m: 13.50...13.60 full load rack tr: 12.10 rpm : 1040...1050 rpm : 1000 2nd speed Speed Rack travel in m: 13.10...13.30 rpm : 650 3rd speed STARTING FUEL DELIVERY Rack travel in m: 12.70...12.90 rpm : 400 4th speed Rack travel in m: 11.90...12.20 Speed rom Del.quantity cm3/: 180.0...200.0 1000 s: (176.0...204.0) Aneroid/Altitude Compensator Test LOW IDLE Speed rpm : 325 Rack travel in mm : 5.90...6.30 1st version Setting Del.quantity cm3/: 47.0...53.0 100G s: (44.0...56.0) Speed : 900 rpm hPa : 1200 Pressure : 13.50...13.60 Rack travel mm

Spread

cm3 : 10.00 1000 s: (14.00)

: MAN-NR. 3-7123 Setting and blocking of pointer of start-of-delivery sensor on cyl. 5 start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : MAN 10,0 c3 : 01.02.91 Edition Replaces Test oil : ISO-4113 : 0 402 735 803 Combination no. Injection pump Pump designation : PES5P120A720/3LS7210 EP type number : 0 412 725 808 Governor Governor design.

: RQV325...1000PA960-3

: 0 421 815 271 Governer no.

Customer-spec. information Customer

: D2865LF06/LU06 Engine

: 235.0 1st version kW : 2000 Rated speed

TEST BENCH REQUIREMENTS

Test oil inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 1 688 901 105

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 015

Outside diameter x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY Test pressure, bar: 25...27

: 4.80...4.90 Prestroke mm : (4.75...4.95) Rack travel in mm : 15.00...16.00 Firing order : 1-3-5-4-Firing order

: 0-72-144-216-288 Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 5

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 4.40...4.60 & maximum rack tra: 15.0...16.0 Difference ° CS : 1.75...3.25

BASIC SETTING

rom: 900 1st speed

Rack travel in mm : 13.50...13.60

Del.quantity cm3/: 26.9...27.1

100 s: (26.6...27.4)

cm3 : 0.5Spread

100 s: (0.9)

2nd speed rpm : 325.0 Rack travel in mm : 5.9...6.3 Del.quantity cm3/: 4.7...5.3 100 s: (4.4...5.6)

cm3 : 0.8

Spread 100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 1045 1st speed travel mm : 9.40...9.60

2nd speed rpm : 325 : 1.30...1.50 travel mm

rpm : 500 3rd speed

: 3.20...3.80 travel mm

rpm : 900 4th speed

: 7.60...8.00 travel mm

rpm : 13505th speed travel mm : 13.00...14.00

GUIDE SLEEVE POSITION Control-lever position

Degree: -1 rpm : 1110 Speed

Rack travel in mm : 15.20...17.80 Measurement 1/min: 900 FULL LOAD DELIV. AT FULL LOAD STOP Speed 1st pressure hPa : -1st version Rack travel in m: 9.20...9.40 rpm : 900 Speed Aneroid pressure h: 1200 2nd pressure hPa : 170 Rack travel in m: 9.60...9.70 3rd pressure hPa : 600 : 269.0...271.0 Del.quantity 1000 : (266.0...274.0) : 5.00 Rack travel in m: 12.00...12.40 Spread cm3 1000 : (9.00) START CUT-OUT RATED SPEED 1/min: 245 (265) Speed 1st version Control Lever FUEL DELIVERY CHARACTERISTICS position degrees: 293...301 Testing: 1st version Aneroid pressure h: 1200 1st rack travel in: 12.10 Speed rpm : 1000 Del.quantity cm3/ : 248.0...254.0 1000 s: (245.0...257.0) Speed rpm : 1040...1050 2nd rack travel in: 4.00 rpm : 1135...1165 Speed 4th rack travel in: 1350 Aneroid pressure h: 1200 Speed rpm : 650 Del.quantity cm3/ : 270.0...276.0 rpm : 0.00...1.00Speed 1000 s: (267.0...279.0) LOW IDLE 1 : 650 Control Lever Speed mar Del.quantity cm3/: 90.0...100.0 position degrees: 249...257 1000 s: (87.0...103.0) cm3 : 10.00 Testing: Spread 1000 s: (-) Speed : 100 rpm Minimum rack trave: 7.60 Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/: 159.0...161.0 1000 s: (156.0...164.0) : 325 rpm Rack travel in mm : 6.00...6.20 CONSTANT REGULATION rpm : 340...450 Speed BREAKAWAY TORQUE CONTROL Dimension a mm :? 1st version Torque control curve - 1st version 1mm rack travel less than rpm : 900 1st speed Rack travel in m: 13.50...13.60 full load rack tr: 12.10 rpm : 1040...1050 2nd speed rpm : 1000 Speed Rack travel in m: 13.10...13.30 rpm : 650 STARTING FUEL DELIVERY 3rd speed Rack travel in m: 12.70...12.90 4th speed rpm : 400 Rack travel in m: 11.90...12.20 rpm : 100 Speed Del.quantity cm3/: 180.0...200.0 1000 s: (176.0...204.0) Aneroid/Altitude Compensator Test LOW IDLE 1st version Speed rpm : 325 Rack travel in mm : 5.90...6.30 Setting Del.quantity cm3/: 47.0...53.0 1000 s: (44.0...56.0) : 900 Speed rpm hPa : 1200 Pressure

Rack travel mm

: 13.50...13.60

cm3 : 8.00 1000 s: (12.00) Spread

: MAN-NR. 3-7124 Setting and blocking of pointer of start-of-delivery sensor on cyl. 5 start of delivery

Note remarks

: CUM 8,3 r : 14.12.90 Test sheet Edition : 15.11.90 Replaces

Test oil : ISO-4113

: 0 402 736 807 Combination no.

Injection pump

Pump designation : PES6P110A120RS7214 : 0 412 716 805 EP type number

Governor

Governor design. : RQV350...1100PA964-1

: 0 421 815 253 Governer no.

Customer-spec. information Customer : C.D.C.

Engine : 6CTA-A

1st version kW : 201.0 : 2200 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 115...125

Test nozzle holder

: 1 688 901 101 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

: 1 680 750 008 Test Lines

Outside diameter x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 22...24

Prestroke mm : 4.35...4.45 : (4.30...4.50)
Rack travel in mm : 10.50

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1050

Rack travel in mm : 15,70...15.80

Del.quantity cm3/: 20.6...20.8

100 s: (20.3...21.1)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 350.0 2nd speed Rack travel in mm: 5.7...5.9

Del.quantity cm3/: 2.7...3.3

100 s: (2.5...3.5)

Spread cm3: 0.8

100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350

: 1.80...2.00 travel mm 2nd speed rpm : 450

: 3.10...3.50 travel mm

3rd speed : 600 rom

: 5.10...5.50 travel mm rpm : 1000 4th speed

: 8.10...8.30 travel mm

: 1200 5th speed rpm : 9.60...10.00 travel mm

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1050 Speed Aneroid pressure h: 1500

Del.quantity : 206.0...208.0

1000 : (203.0...211.0)

cm3 : 5.00 Spread 1000 : (9.00) RATED SPEED 1st version Control lever position degrees: 64...72 Testing: 1st rack travel in: 14.40 rpm : 1145...1155 Speed 2nd rack travel in: 4.00 rpm : 1300...1330 Speed 4th rack travel in: 1400 rpm : 0.00...1.00Speed LOW IDLE 1 Control lever position degrees: 11...19 Testing: Speed : 275 rpm Minimum rack trave: 7.20 : 350 rpm Rack travel in mm : 5.70...5.90 CONSTANT REGULATION rpm : 325...520 Speed TORQUE CONTROL Dimension a mm :? Torque control curve - 1st version rpm : 1050 1st speed Rack travel in m: 15.70...15.80 rpm : 650 2nd speed Rack travel in m: 13.20...13.60 3rd speed rpm : 1100 Rack travel in m: 15.40...15.60 Aneroid/Altitude Compensator Test 1st version Setting Speed : 1050 rom hPa : 1500 Pressure Rack travel mm : 15.70...15.80 Measurement Speed 1/min : 1050 1st pressure hPa : -Rack travel in m: 8.40...8.80 2nd pressure hPa : 340 Rack travel in m: 10.20...10.30

START CUT-OUT Speed 1/min : 275 (285) FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1500 rpm : 650 Speed Del.quantity cm3/: 187.5...193.5 1000 s: (184.5...196.5) cm3 : 8.00 Spread 1000 s: (12.) Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/ : 98.0...102.0 1000 s: (96.0...104.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 14.40 Speed rpm : 1145...1155 STARTING FUEL DELIVERY rpm : 100 Speed Del.quantity cm3/: 160.0...180.0 1000 s: (155.0...185.0) Rack travel in mm : 11.40...12.40 LOW IDLE Speed rpm : 350
Rack travel in mm : 5.70...5.90
Del.quantity cm3/: 27.0...33.0 1000 s: (25.0...35.0) Spread cm3 : 8.00 1000 s: (12.00) Remarks: : C.D.C # 3916627 Start-of-delivery mark = 5.5° after start of delivery cyl. 1. Bow dimension: Sliding-sleeve position = 37.0 mm

3rd pressure hPa : 840

Rack travel in m: 13.60...14.00

BOSCH INJ. PUMP TEST SPECIFICATIONS : 4.80...4.90 Prestroke mm : (4.75...4.95) Note remarks Rack travel in mm : 15.00...16.00 : 6-2-4-1-5-3 : MAN 11,9 t Test sheet Firing order : 18.01.91 Edition Replaces : 6.7.90 : ISO-4113 Test oil Phasina : 0-60-120-180-240-300 : 0 402 736 808 Combination no. : 0.50 (0.75) Tolerance + - ° Injection pump Pump designation : PES6P120A720/3LS7209 Time to cyl. no. : 6 EP type number : 0 412 726 837 BASIC SETTING Governor : RQV300...1000PA962-1 Governor design. rpm: 900 1st speed : 0 421 815 248 Governer no. Rack travel in mm : 13.50...13.60 Customer-spec. information : MAN Del.guantity cm3/: 28.5...28.7 Customer 100 s: (28.2...29.0) : D2866LF06 Engine : 309.0 cm3 : 0.51st version kW Spread Rated speed : 2000 100 s: (0.9) TEST BENCH REQUIREMENTS rpm : 300.0 2nd speed Rack travel in mm: 4.8...5.2 Test oil Del.quantity cm3/ : 2.0...2.6 inlet temp. °C : 38...42 100 s: (1.7...2.9) Overflow valve Spread cm3 : 0.8: 1 417 413 025 100 s: (1.2) (B) Setting of injection pump Inlet press., bar: 1.50 with governor Test nozzle holder : 1 688 901 105 GUIDE SLEEVE TRAVEL assembly rpm : 1045 1st speed : 8.40...8.60 travel mm Opening | : 207...210 2nd speed : 300 pressure, bar rpm : 2.10...2.30 travel mm : 500 Orifice plate 3rd speed rpm : 4.10...4.50 : 0,8 travel mm diameter mm : 900 4th speed rpm : 6.50...6.90 travel mm : 1 680 750 015 5th speed : 1350 Test Lines man : 13.00...14.00 travel mm Outside diameter x Wall thickness GUIDE SLEEVE POSITION : 6.00x1.50x600 Control-lever position x Length mm Degree: -1 (A) Injection pump setting values rpm : 1140 Speed Insp. values in parentheses

GUIDE SLEEVE POSITION
Control-lever position
Degree: -1
Speed rpm : 1140
Rack travel in mm : 15.20...17.80
FULL LOAD DELIV. AT FULL LOAD STOP
1st version
Speed rpm : 900

Set equal delivery quant.

per values

Test pressure, bar: 25...27

BEGINNING OF DELIVERY

Aneroid pressure h: 1300 2nd pressure hPa : 220 Rack travel in m: 9.10...9.20 3rd pressure hPa : 720 : 285.0...287.0 Del.quantity 1000 : (282.0...290.0) Rack travel in m: 11.40...11.60 : 5.00 Spread cm31000 : (9.00) START CUT-OUT RATED SPEED 1/min: 220 (240) Speed 1st version Control lever FUEL DELIVERY CHARACTERISTICS position degrees: 284...292 1st version Testina: 1st rack travel in: 12.10 Speed rpm : 1040...1050 Aneroid pressure h: 1300 Speed rpm : 1000 Del.quantity cm3/: 261.0...265.0 2nd rack travel in: 4.00 rpm : 1140...1170 1000 s: (258.0...268.0) Speed 4th rack travel in: 1300 Aneroid pressure h: 1300 rpm : 0.00...1.00 rpm : 750 Speed Speed Del.quantity cm3/: 271.0...277.0 1000 s: (268.0...280.0) LOW IDLE 1 Control lever : 750 Speed man position degrees: 240...248 Del.quantity cm3/: 102.0...112.0 1000 s: (99.0...115.0) Testina: Spread cm3 : 10.001000 s: (14.0) Speed : 100 rpm Minimum rack trave: 6.50 Aneroid pressure h: rpm : 500 : 300 rpm Speed Del.quantity cm3/: 166.0...168.0 Rack travel in mm : 4.90...5.10 1000 s: (163.0...171.0) CONSTANT REGULATION rpm : 320...440 Speed **BREAKAWAY** TORQUE CONTROL Dimension a mm :? 1st version Torque control curve - 1st version 1mm rack travel less than 1st speed rpm : 900 Rack travel in m: 13.50...13.60 full load rack tr: 12.10 : 1000 rpm : 1040...1050 2nd speed rpm Speed Rack travel in m: 13.00...13.20 rpm : 750 3rd speed STARTING FUEL DELIVERY Rack travel in m: 12.70...12.90 rpm : 400 4th speed Rack travel in m: 11.50...11.70 Speed rpm : 100 Del.quantity cm3/: 210.0...230.0 1000 s: (206.0...234.0) Aneroid/Altitude Compensator Test LOW IDLE rpm : 300 1st version Speed Rack travel in mm : 4.80...5.20 Settina : 900 Del.quantity cm3/: 20.0...26.0 Speed rpm hPa : 1300 1000 s: (17.0...29.0) Pressure cm3 : 8.00 : 13.50...13.60 Rack travel mm Spread 1000 s: (12.00) Measurement 1/min: 900 Remarks: Speed : MAN-NR. 2-7987 1st pressure hPa : -Rack travel in m: 8.80...9.00 Setting and blocking of pointer of

start-of-delivery sensor on cyl. 6 start of delivery

5 BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks : MAN 11,9 t1 Test sheet : 18.01.91 Edition Replaces : 6.7.90 : ISO-4113 Test oil Combination no. : 0 402 736 809 Injection pump Pump designation : PES6P120A720/3LS7209 EP type number : 0 412 726 837 Governor : RQV300...1000PA960-2 Governor design. : 0 421 815 249 Governer no. Customer-spec. information Customer : MAN : D2866LF06 Engine : 309.0 1st version kW : 2000 Rated speed TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 417 413 025 Inlet press., bar: 1.50 Test nozzle holder assembly : 1 688 901 105 Opening | pressure, bar : 207...210 Orifice plate diameter mm : 0,8 Test lines : 1 680 750 015 Outside diameter x Wall thickness : 6.00x1.50x600 x Length mm (A) Injection pump setting values

Insp. values in parentheses Set equal delivery quant.

per values ____

Test pressure, bar: 25...27

BEGINNING OF DELIVERY

: (4.75...4.95) Rack travel in mm : 15.00...16.00 : 6-2-4-1-5-3 Firing order : 0-60-120-180-240-300 Phasing : 0.50 (0.75) Tolerance + - ° Time to cyl. no. : 6 BASIC SETTING ŝ 1st speed rpm: 900 Rack travel in mm : 13.50...13.60 Del.quantity cm3/: 28.5...28.7 100 s: (28.2...29.0) cm3 : 0.5Spread 100 s: (0.9) rpm : 300.0 2nd speed Rack travel in mm : 4.8...5.2 Del.quantity cm3/: 2.0...2.6 100 s: (1.7...2.9) cm3 : 0.8Spread 100 s: (1.2) (B) Setting of injection pump with governor GUIDE SLEEVE TRAVEL rpm : 1045 1st speed travel mm : 9.60...9.80 2nd speed rpm : 300 travel mm : 1.40...1.80 : 500 3rd speed rpm 3.50...4.10 travel mm 900 4th speed rpm : 7.70...8.10 travel mm : 1350 5th speed rom : 13.00...14.00 travel mm GUIDE SLEEVE POSITION Control-lever position Dearee: -1 rpm : 1100 Speed Rack travel in mm : 15.20...17.80 FULL LOAD DELIV. AT FULL LOAD STOP 1st version rpm : 900 Speed

Prestroke mm

: 4.80...4.90

2nd pressure hPa : 220 Rack travel in m: 9.10...9.20 Aneroid pressure h: 1300 : 285.0...287.0 Del.quantity 3rd pressure hPa : 720 1000 : (282.0...290.0) : 5.00 Rack travel in m: 11.40...11.60 Spread cm31000 : (9.00)START CUT-OUT RATED SPEED 1/min : 220 (240) Speed 1st version Control lever FUEL DELIVERY CHARACTERISTICS position degrees: 293...301 Testing: 1st version Aneroid pressure h: 1300 1st rack travel in: 12.10 rpm : 1040...1050 rpm : 1000 Speed Speed Del.quantity cm3/: 261.0...265.0 1000 s: (258.0...268.0) 2nd rack travel in: 4.00 Speed rpm: 1140...1170 4th rack travel in: 1300 Aneroid pressure h: 1300 rpm : 0.00...1.00rpm : 750 Speed Speed Del.quantity cm3/: 271.0...277.0 1000 s: (268.0...280.0) LOW IDLE 1 : 750 Control lever Speed rpm Del.quantity cm3/: 102.0...112.0 1000 s: (99.0...115.0) position degrees: 247...255 cm3 : 10.00Testing: Spread 1000 s: (14.0) Speed : 100 rom Minimum rack trave: 6.50 Speed rpm : 300 Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/: 166.0...168.0 Rack travel in mm : 4.90...5.10 1000 s: (163.0...171.0) CONSTANT REGULATION rpm : 320...440 Speed BREAKAWAY TORQUE CONTROL Dimension a mm :? 1st version Torque control curve - 1st version 1mm rack travel less than 1st speed rpm : 900 Rack travel in m: 13.50...13.60 full load rack tr: 12.10 nd speed rpm : 1000 Rack travel in m: 13.00...13.20 rpm : 1040...1050 2nd speed Speed 3rd speed rpm : 750 STARTING FUEL DELIVERY Rack travel in m: 12.70...12.90 4th speed rpm : 400 Rack travel in m: 11.50...11.70 rpm : 100 Speed Del.quantity cm3/: 210.0...230.0 1000 s: (206.0...234.0) Aneroid/Altitude Compensator Test LOW IDLE rpm : 300 1st version Speed Rack travel in mm: 4.80...5.20
Del.quantity cm3/: 20.0...26.0
1000 s: (17.0...29.0)
Spread cm3: 8.00 Setting : 900 Speed man hPa : 1300 Pressure : 13.50...13.60 Rack travel mm 1000 s: (12.00) Measurement 1/min: 900 Remarks: Speed : MAN-NR. 3-7052 1st pressure hPa : -Rack travel in m: 8.80...9.00 Setting and blocking of pointer of

start-of-delivery sensor on cyl. 6 start of delivery

Note remarks

: CUM 8,3 r 6 Test sheet Edition : 14.12.90

Replaces

Test oil : ISO-4113

Combination no. : 0 402 736 812

Injection pump

Pump designation : PES6P110A120RS7214

EP type number : 0 412 716 805

Governor

: RQV350...1200PA964-4 Governor design.

: 0 421 815 256 Governer no.

Customer—spec. information Customer : C.D.C.

: 6CTA-A Engine

: 156.0 1st version kW : 2400 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 115...125

Test nozzle holder

: 1 688 901 101 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter

x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 22...24

: 4.35...4.45 Prestroke mm

: (4.30...4.50)

Rack travel in mm: 10.50

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance $+ - ^{\circ} : 0.50 (0.75)$

Time to cyl. no. : 1

BASIC SETTING

rpm: 1200 1st speed

Rack travel in mm : 12.60...12.70

Del.quantity cm3/: 14.7...14.9

100 s: (14.4...15.2)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 350.0 2nd speed Rack travel in mm : 5.6...5.8

Del.quantity cm3/ : 2.7...3.3

100 s: (2.5...3.5)

cm3 : 0.8Spread 100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 350 1st speed

: 1.80...2.00 travel mm

rpm : 450 2nd speed

: 3.10...3.50 travel mm

3rd speed rpm : 700

: 5.90...6.30 travel mm

rpm : 1200 4th speed

: 9.00...9.20 travel mm

5th speed : 1400 rpm : 10.70...11.10 travel mm

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1200

Aneroid pressure h: 1200

Del.quantity : 147.5...149.5 1000 : (144.5...152.5)

cm3 : 5.00Spread 1000 : (9.00) RATED SPEED 1st version Control lever position degrees: 60...68 Testing: 1st rack travel in: 11.60 rpm : 1245...1255 Speed 2nd rack travel in: 4.00 Speed rpm : 1375...1405 4th rack travel in: 1500 rpm : 0.00...1.00 Speed LOW IDLE 1 Control lever position degrees: 11...19 Testing: rpm : 275 Speed Minimum rack trave: 7.20 rpm : 350 Rack travel in mm : 5.60...5.80 CONSTANT REGULATION rpm : 325...520 Speed TORQUE CONTROL Dimension a mm :? Torque control curve - 1st version 1st speed rpm : 1200 Rack travel in m: 12.60...12.70 2nd speed rpm : 650 Rack travel in m: 11.20...11.60 d speed rpm : 550 3rd speed Rack travel in m: 10.90...11.30 Aneroid/Altitude Compensator Test 1st version Setting : 1200 Speed man hPa : 1200 Pressure Rack travel mm : 12.60...12.70 Measurement 1/min: 1200 Speed 1st pressure hPa : -Rack travel in m: 8.00...8.40 2nd pressure hPa : 225

Rack travel in m: 9.20...9.30

Rack travel in m: 11.20...11.60

3rd pressure hPa : 515

1/min: 265 (270) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1200 rpm : 650 Speed Del.quantity cm3/: 152.5...158.5 1000 s: (149.5...161.5) cm3 : 8.00 Spread 1000 s: (12.0) Aneroid pressure h: rpm : 500 Speed Del.quantity cm3/: 90.0...94.0 1000 s: (88.0...96.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 11.60 Speed rpm : 1245...1255 STARTING FUEL DELIVERY rpm : 100 Speed Del.quantity cm3/: 145.0...165.0 1000 s: (140.0...170.0) Rack travel in mm : 11.00...12.00 LOW IDLE Speed rpm : 350
Rack travel in mm : 5.60...5.80
Del.quantity cm3/ : 27.0...33.0
1000 s: (25.0...35.0) cm3 : 8.00 Spread 1000 s: (12.00) Remarks: : C.D.C # 3917088 Start-of-delivery mark = 5.5° after start of delivery cyl. 1. Bow dimension:

Sliding-sleeve position = 37.0 mm

START CUT-OUT

Note remarks

: CUM 8,3 r 4 Test sheet Edition : 07.01.91 : 15.11.90 Replaces

: ISO-4113 Test oil

Combination no. : 0 402 736 813

Injection pump

Pump designation : PES6P110A120RS7214

EP type number

: 0 412 716 805

Governor

Governor design. : RQV350...1100PA964-5

Governer no. : 0 421 815 257

Customer-spec. information : C.D.C. Customer

Engine : 6CTA-A

: 187.0 1st version kW Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 115...125

Test nozzle holder

: 1 688 901 101 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

Test Lines : 1 680 750 008

Outside diameter

x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 22...24

: 4.35...4.45 Prestroke mm

: (4.30...4.50)

Rack travel in mm : 10.50

: 1-5-3-6-2-4 Firing order

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

rpm: 1100 1st speed

Rack travel in mm : 14.50...14.60

Del.quantity cm3/: 18.6...18.8

100 s: (18.3...19.1)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 350.0 Rack travel in mm : 5.7...5.9 Del.quantity cm3/ : 2.7...3.3 100 s: (2.5...3.5)

cm3 : 0.8 Spread

100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed

rpm : 350 : 1.80...2.00 travel mm

rpm : 450 2nd speed travel mm

: 3.10...3.50

3rd speed rpm : 600 : 5.10...5.50 travel mm

: 1000 4th speed rpm

: 8.10...8.30 travel mm

5th speed : 1200 rpm : 9.60...10.00 travel mm

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1100 Speed

Aneroid pressure h: 1200

Del.quantity : 186.5...188.5 1000 : (183.5...191.5)

cm3 : 5.00Spread

1000 : (9.00)

RATED SPEED

1st version Control lever

position degrees: 62...70

Testing:

1st rack travel in: 13.50 rpm : 1145...1155 Speed

2nd rack travel in: 4.00

Speed rpm : 1290...1320 4th rack travel in: 1400

Speed rpm : 0.00...1.00

LOW IDLE 1 Control lever

position degrees: 11...19

Testing:

Speed rpm : 275 Minimum rack trave: 7.20 rpm : 350

Rack travel in mm : 5.70...5.90

CONSTANT REGULATION

rpm : 325...520 Speed

TORQUE CONTROL

Dimension a mm :?

Torque control curve - 1st version

1st speed rpm : 1100

Rack travel in m: 14.50...14.60

rpm : 650 2nd speed

Rack travel in m: 13.50...13.70

3rd speed rpm : 500

Rack travel in m: 12.90...13.30

Aneroid/Altitude

Compensator Test

1st version Setting

: 1100 Speed rom Pressure hPa : 1200

: 14.50...14.60 Rack travel mm

Measurement

1/min: 1100 Speed

1st pressure hPa : -

Rack travel in m: 8.30...8.70

2nd pressure hPa : 285

Rack travel in m: 9.70...9.80

3rd pressure hPa : 700 Rack travel in m: 12.60...13.00

START CUT-OUT

1/min : 290 (300) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200 : 650 Speed rpm

Del.quantity cm3/: 198.0...204.0 1000 s: (195.0...207.0)

cm3 : 8.00Spread 1000 s: (12.0)

Aneroid pressure h: -

: 500 Speed rpm

Del.quantity cm3/: 98.0...102.0 1000 s: (96.0...104.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.50

rpm : 1145...1155 Speed

STARTING FUEL DELIVERY

: 100 Speed rpm

Del.quantity cm3/: 145.0...165.0

1000 s: (140.0...170.0)

Rack travel in mm : 10.80...11.80

LOW IDLE

Speed rpm: 350
Rack travel in mm: 5.70...5.90
Del.quantity cm3/: 27.0...33.0
1000 s: (25.0...35.0)
Spread cm3: 8.00

1000 s: (12.00)

Remarks:

: C.D.C # 3916628

Start-of-delivery mark = 5.5° after start of delivery cyl. 1.

Bow dimension:

Sliding-sleeve position = 37.0 mm

Note remarks

: CUM 8,3 r 1 Test sheet : 07.01.91 Edition : 15.11.90 Replaces

Test oil : ISO-4113

Combination no. : 0 402 736 814

Injection pump

Pump designation : PES6P110A120RS7214

EP type number : 0 412 716 805

Governor

: RQV350...1200PA964-6 Governor design.

: 0 421 815 258 Governer no.

Customer-spec. information Customer : C.D.C.

Engine : 6CTA-A

: 187.0 1st version kW Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 115...125

Test nozzle holder

: 1 688 901 101 assembly

Opening .

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

Test Lines : 1 680 750 008

Outside diameter

x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 22...24

: 4.35...4.45 Prestroke mm

: (4.30...4.50)

Rack travel in mm : 10.50

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

rpm: 1200 1st speed

Rack travel in mm : 14.50...14.60

Del.quantity cm3/: 18.3...18.5

100 s: (18.0...18.8)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 350.0 2nd speed Rack travel in mm: 5.4...5.6 Del.quantity cm3/: 2.7...3.3

100 s: (2.5...3.5)

cm3 : 0.8 Spread 100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 350 1st speed

: 1.80...2.00 travel mm rpm : 450 2nd speed

: 3.10...3.50 rpm : 700 travel mm

3rd speed

: 5.90...6.30 travel mm

rpm : 1200 4th speed travel mm : 9.00...9.20

5th speed : 1400 rom

: 10.70...11.10 travel mm

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1200 Aneroid pressure h: 1200

Del.quantity : 183.0...185.0 1000 : (180.0...188.0)

cm3 : 5.00Spread 1000 : (9.00) RATED SPEED 1st version Control lever position degrees: 62...70 Testina: 1st rack travel in: 13.50 Speed rpm : 1245...1255 2nd rack travel in: 4.00 rpm : 1405...1435 Speed 4th rack travel in: 1500 Speed rom : 0.00...1.00 LOW IDLE 1 Control Lever position degrees: 11...19 Testing: Speed rpm : 275 Minimum rack trave: 7.20 rpm Rack travel in mm : 5.40...5.60 CONSTANT REGULATION rpm : 325...520 Speed TORQUE CONTROL Dimension a mm :? Torque control curve - 1st version 1st speed rpm : 1200 Rack travel in m: 14.50...14.60 rpm : 650 2nd speed Rack travel in m: 11.60...12.00 Aneroid/Altitude Compensator Test 1st version Setting : 1200 Speed rpm hPa : 1200 Pressure : 14.50...14.60 Rack travel mm Measurement 1/min: 1200 Speed 1st pressure hPa : -Rack travel in m: 7.70...8.10 2nd pressure hPa : 270 Rack travel in m: 9.50...9.60

1/min : 290 (300) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1200 : 650 Speed rpm Del.quantity cm3/: 167.5...173.5 1000 s: (164.5...176.5) cm3 : 8.00Spread 1000 s: (12.0) Aneroid pressure h: rpm : 500 Speed Del.quantity cm3/: 90.0...94.0 1000 s: (88.0...96.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 13.50 Speed rpm : 1245...1255 STARTING FUEL DELIVERY : 100 Speed rpm Del.quantity cm3/: 140.0...160.0 1000 s: (135.0...165.0) Rack travel in mm: 10.70...11.70 LOW IDLE ٤. Speed : 350 rpm Rack travel in mm : 5.40...5.60 Del.quantity cm3/: 27.0...33.0 1000 s: (25.0...35.0) Spread cm3 : 8.00 1000 s: (12.00) Remarks: : C.D.C # 3917089 Start-of-delivery mark = 5.5° after start of delivery cyl. 1.

Bow dimension: Sliding-sleeve position = 37.0 mm

3rd pressure hPa : 700

Rack travel in m: 12.60...13.00

Note remarks

Test sheet : CUM 8,3 r 5
Edition : 07.01.91
Replaces : 15.11.90

Test oil : ISO-4113

Combination no. : 0 402 736 815

Injection pump

Pump designation : PES6P110A120RS7214 EP type number : 0 412 716 805

Governor

Governor design. : RQV350...1000PA964-7

K

Governer no. : 0 421 815 259

Customer—spec. information Customer : C.D.C.

Engine : 6CTA-A

1st version kW : 194.0 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar : 1.50

Overflow

quantity min. 1/h: 115...125

Test nozzle holder

assembly : 1 688 901 101

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,6

Test Lines : 1 680 750 008

Outside diameter x Wall thickness

x Length mm : 6.00X2,00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 22...24

Prestroke mm : 4.35...4.45

: (4.30...4.50)

Rack travel in mm: 10.50

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance $+ - ^{\circ} : 0.50 (0.75)$

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 900

Rack travel in mm : 15.80...15.90

Del.quantity cm3/: 21.7...21.9

100 s: (21.4...22.2)

Spread cm3: 0.5

100 s: (0.9)

2nd speed rpm : 350.0 Rack travel in mm : 5.6...5.8

Del.quantity cm3/: 2.7...3.3

100 s: (2.5...3.5)

Spread cm3 : 0.8 100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350

travel mm : 1.60...1.80

2nd speed rpm: 450

travel mm : 3.00...3.40

3rd speed rpm: 600

travel mm : 5.20...5.60

4th speed rpm : 1000 travel mm : 8.40...8.60

5th speed rpm: 1150

travel mm : 9.80...10.20

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm: 900

Aneroid pressure h: 1500

Del.quantity : 217.0...219.0

1000 : (214.0...222.0)

Spread cm3 : 5.00 1000 : (9.00) RATED SPEED 1st version Control lever position degrees: 62...70 Testing: 1st rack travel in: 14.30 rpm : 1050...1060 Speed 2nd rack travel in: 4.00 rpm : 1205...1235 Speed 4th rack travel in: 1300 Speed rpm : 0.00...1.00LOW IDLE 1 Control Lever position degrees: 11...19 Testing: : 275 Speed rpm Minimum rack trave: 7.20 rpm : 350 Rack travel in mm : 5.60...5.80 CONSTANT REGULATION rpm : 325...520 Speed TORQUE CONTROL Dimension a mm Torque control curve - 1st version 1st speed rpm : 900 Rack travel in m: 15.80...15.90 rpm : 650 2nd speed Rack travel in m: 14.00...14.40 rd speed rpm : 1000 Rack travel in m: 15.30...15.50 3rd speed rpm Aneroid/Altitude Compensator Test 1st version Setting : 900 Speed man Pressure hPa : 1500 : 15.80...15.90 Rack travel mm Measurement 1/min: 900 Speed 1st pressure hPa : -Rack travel in m: 8.30...8.70 2nd pressure hPa : 340

Rack travel in m: 10.20...10.30

Rack travel in m: 13.60...14.00

3rd pressure hPa : 840

START CUT-OUT 1/min : 290 (300) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1500 rpm : 650 Speed Del.quantity cm3/: 211.0...217.0 1000 s: (208.0...220.0) cm3 : 8.00Spread 1000 s: (12.0) Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/ : 98.0...102.0 1000 s: (96.0...104.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 14.30 Speed rpm : 1050...1060 STARTING FUEL DELIVERY rpm : 100 Speed Del.quantity cm3/: 150.0...170.0 1000 s: (145.0...175.0) Rack travel in mm : 10.90...11.90 LOW IDLE Speed rpm : 350
Rack travel in mm : 5.60...5.80
Del.quantity cm3/: 27.0...33.0
1000 s: (25.0...35.0) cm3 : 8.00 Spread 1000 s: (12.00) Remarks: : C.D.C # 3916629 Start-of-delivery mark = 5.5° after start of delivery cyl. 1. Bow dimension:

Sliding-sleeve position = 37.0 mm

Note remarks

: CUM 8,3 r 2 : 07.01.91 Test sheet Edition : 15.11.90 Replaces

Test oil : ISO-4113

Combination no. : 0 402 736 816

Injection pump

Pump designation : PES6P110A120RS7214

EP type number

: 0 412 716 805

Governor

: RQV350...1200PA964-8 Governor design.

: 0 421 815 264 Governer no.

Customer-spec. information : C.D.C. Customer

: 6CTA-A Engine

1st version kW : 213.0 : 2400 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 115...125

Test nozzle holder

: 1 688 901 101 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

: 1 680 750 008 Test lines

Outside diameter

x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 22...24

: 4.35...4.45 : (4.30...4.50) Prestroke mm

Rack travel in mm : 10.50

: 1-5-3-6-2-4 Firing order

Phasing : 0-60-120-180-240-300

: 0.50 (0.75) Tolerance + - °

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm: 14.70...14.80

Del.quantity cm3/: 19.0...19.2

100 s: (18.7...19.5)

cm3 : 0.5 Spread

100 s: (0.9)

2nd speed rpm : 350.0 Rack travel in mm : 5.6...5.8

Del.guantity cm3/: 2.7...3.3

100 s: (2.5...3.5)

cm3 : 0.8Spread 100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed

rpm : 350 : 1.80...2.00 travel mm

2nd speed rpm : 450

travel mm : 3.10...3.50

rpm : 700 3rd speed

: 5.90...6.30 : 1200 travel mm

4th speed rpm

: 9.00...9.20 travel mm

5th speed rpm : 1400

: 10.70...11.10 travel mm

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Aneroid pressure h: 1200

Del.quantity : 190.0...192.0 1000 : (187.0...195.0)

cm3 : 5.00 1000 : (9.00) Spread RATED SPEED 1st version Control lever position degrees: 62...70 Testina: 1st rack travel in: 13.20 rpm : 1245...1255 Speed 2nd rack travel in: 4.00 Speed rpm : 1400...1430 4th rack travel in: 1500 Speed rpm : 0.00...1.00 LOW IDLE 1 Control Lever position degrees: 11...19 Testing: Speed rpm Minimum rack trave: 7.20 : 350 rpm Rack travel in mm : 5.60...5.80 CONSTANT REGULATION rpm : 325...520 Speed TORQUE CONTROL Dimension a mm :? Torque control curve - 1st version rpm : 1100 1st speed Rack travel in m: 14.70...14.80 2nd speed rpm : 650 Rack travel in m: 12.60...13.00 3rd speed rpm : 1200 Rack travel in m: 14.20...14.40 Aneroid/Altitude Compensator Test 1st version Setting Speed : 1100 rpm Pressure hPa : 1200 : 14.70...14.80 Rack travel mm Measurement 1/min: 1100 Speed 1st pressure hPa : -Rack travel in m: 7.80...8.20 2nd pressure hPa : 260 Rack travel in m: 9.60...9.70

START CUT-OUT 1/min : 290 (300) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1200 : 650 Speed man Del.quantity cm3/: 181.0...187.0 1000 s: (178.0...190.0) cm3 : 8.00 1000 s: (12.0) Spread Aneroid pressure h: rpm : 500 Speed Del.quantity cm3/: 90.0...94.0 1000 s: (88.0...96.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 13.20 rpm : 1245...1255 Speed STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/: 140.0...160.0 1000 s: (135.0...165.0) Rack travel in mm : 10.70...11.70 LOW IDLE Speed rpm : 350 Rack travel in mm : 5.60...5.80 Del.quantity cm3/: 27.0...33.0 1000 s: (25.0...35.0) Spread cm3 : 8.00 1000 s: (12.00) Remarks: : C.D.C # 3916626 Start-of-delivery mark 6° cam angle after start of delivery cyl. 1

Bow dimension:

Sliding-sleeve position = 37.0 mm

3rd pressure hPa : 710

Rack travel in m: 12.80...13.20

BOSCH INJ. PUMP TEST SPECIFICATIONS Prestroke mm Note remarks Test sheet : MAN 11,9 t2 Firing order Edition : 01.02.91 Replaces Test oil : ISO-4113 Phasing Combination no. : 0 402 736 817 Tolerance + - ° Injection pump Pump designation : PES6P120A720/3LS7209 EP type number : 0 412 726 837 BASIC SETTING Governor : RQV300...1000PA962-3 Governor design. 1st speed : 0 421 815 270 Governer no. Customer-spec. information Customer : MAN Engine : D2866LF09 1st version kW : 309.0 Spread : 2000 Rated speed TEST BENCH REQUIREMENTS 2nd speed Test oil inlet temp. °C : 38...42 Overflow valve Spread : 1 417 413 025 Inlet press., bar: 1.50 with governor Test nozzle holder : 1 688 901 105 assembly GUIDE SLEEVE TRAVEL 1st speed **Opening** travel mm pressure, bar : 207...210 2nd speed rpm travel mm 3rd speed Orifice plate rpm diameter mm : 0,8 travel mm 4th speed rpm travel mm Test Lines : 1 680 750 015 5th speed rpm travel mm Outside diameter x Wall thickness x Length mm : 6.00X1.50X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY Test pressure, bar: 25...27

: 4.80...4.90 : (4.75...4.95) Rack travel in mm : 15.00...16.00 : 6-2-4-1-5-3 : 0-60-120-180-240-300 : 0.50 (0.75) Time to cyl. no. : 6 rpm: 900 Rack travel in mm : 14.10...14.30 Del.guantity cm3/: 30.4...30.6 100 s: (30.1...30.9) cm3 : 0.5100 s: (0.9) rpm : 300.0Rack travel in mm: 4.8...5.2 Del.quantity cm3/: 2.0...2.6 100 s: (1.7...2.9) cm3 : 0.8100 s: (1.2) (B) Setting of injection pump rpm : 1045 : 8.30...8.50 : 300 1.90...2.30 500 : 4.00...4.60 : 900 : 6.50...6.90 : 1350 : 13.00...14.00 GUIDE SLEEVE POSITION Control-lever position Degree: -1 Speed

rpm : 1140

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 900 Speed

2nd pressure hPa : 220 Rack travel in m: 9.30...9.40 Aneroid pressure h: 1300 : 304.0...306.0 Del.quantity 1000 : (301.0...309.0) 3rd pressure hPa : 720 cm3 : 5.00 Rack travel in m: 11.70...11.90 Spread 1000 : (9.00) START CUT-OUT RATED SPEED 1/min : 220 (240) Speed 1st version FUEL DELIVERY CHARACTERISTICS Control lever position degrees: 284...292 1st version Testing: Aneroid pressure h: 1300 1st rack travel in: 12.60 Speed rpm : 1000 Del.quantity cm3/ : 276.0...282.0 1000 s: (273.0...285.0) rpm : 1040...1050 Speed 2nd rack travel in: 4.00 rpm : 1140...1170 Speed 4th rack travel in: 1300 Aneroid pressure h: 1300 rpm : 0.00...1.00 Speed rpm : 750 Speed Del.quantity cm3/: 286.0...292.0 1000 s: (283.0...295.0) LOW IDLE 1 rpm : 750 Control lever Speed Del.quantity cm3/: 102.0...112.0 1000 s: (99.0...115.0) position degrees: 239...247 cm3 : 10.00Testing: Spread 1000 s: (14.0) Speed : 100 rpm Minimum rack trave: 6.50 Aneroid pressure h: rpm : 300 rpm : 500 Speed Del.quantity cm3/: 168.0...170.0 1000 s: (165.0...173.0) Rack travel in mm : 4.90...5.10 CONSTANT REGULATION rpm : 300...420 Speed **BREAKAWAY** TORQUE CONTROL Dimension a mm :? 1st version Torque control curve - 1st version 1mm rack travel less than 1st speed rpm : 900 Rack travel in m: 14.10...14.20 full load rack tr: 12.60 rpm : 1000 rpm : 1040...1050 2nd speed Speed Rack travel in m: 13.60...13.80 3rd speed rpm : 750 STARTING FUEL DELIVERY Rack travel in m: 13.20...13.40 4th speed rpm : 400 Rack travel in m: 12.20...12.50 rpm : 100 Speed Del.quantity cm3/: 200.0...220.0 1000 s: (196.0...224.0) Aneroid/Altitude Compensator Test LOW IDLE Speed rpm : 300
Rack travel in mm : 4.80...5.20
Del.quantity cm3/: 20.0...26.0
1000 s: (17.0...29.0) 1st version Setting : 900 Speed rpm hPa : 1300 Pressure Rack travel mm : 14.10...14.20 cm3 : 8.00Spread 1000 s: (12.00) Measurement Speed 1/min: 900 Remarks: : MAN-NR. 3-7094 1st pressure hPa : -Rack travel in m: 9.00...9.20

Setting and blocking of pointer of

į

Note remarks

: MAN 11,9 t3 : 14.12.90 Test sheet Edition

Replaces

Test oil : ISO-4113

: 0 402 736 818 Combination no.

Injection pump

Pump designation: PES6P120A720/3LS7209

EP type number : 0 412 726 837

Governor

: RQV300...1000PA960-4 Governor design.

: 0 421 815 272 Governer no.

Customer—spec. information Customer : MAN

: D2866LF09 Engine

: 309.0 1st version kW : 2000 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 105 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0.8

: 1 680 750 015 Test lines

Outside diameter

x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.80...4.90

: (4.75...4.95)
Rack travel in mm : 15.00...16.00

Firing order

: 6-2-4-1-5-3

Phasing : 0-60-120-180-240-300

Tolerance $+ - ^{\circ} : 0.50 (0.75)$

Time to cyl. no. : 6

BASIC SETTING

rpm: 900 1st speed

Rack travel in mm : 14.10...14.30

Del.quantity cm3/: 30.4...30.6

100 s: (30.1...30.9)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 300.0 2nd speed Rack travel in mm: 4.8...5.2

Del.quantity cm3/: 2.0...2.6

100 s: (1.7...2.9)

cm3 : 0.8 Spread 100 s: (1.2)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

rpm : 1045 1st speed

: 9.50...9.70 travel mm rpm : 300 2nd speed

travel mm : 1.40...1.80 rpm : 500 3rd speed

: 3.50...4.10 travel mm

rpm : 900 4th speed

: 7.70...8.10 travel mm

: 1350 5th speed rpm

: 13.00...14.00 travel mm

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

rpm : 1100 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 900 Speed

Aneroid pressure h: 1300 2nd pressure hPa : 220 Rack travel in m: 9.20...9.30 : 304.0...306.0 Del.quantity 3rd pressure hPa : 720 1000 : (301.0...309.0) Rack travel in m: 11.50...11.70 : 5.00 cm3 Spread 1000 : (9.00) START CUT-OUT RATED SPEED 1/min: 220 (240) Speed 1st version FUEL DELIVERY CHARACTERISTICS Control lever position degrees: 294...302 1st version Testina: 1st rack travel in: 12.60 Aneroid pressure h: 1300 rpm : 1040...1050 rpm : 1000 Speed Speed 2nd rack travel in: 4.00 Del.quantity cm3/: 276.0...282.0 rpm : 1140...1170 1000 s: (273.0...285.0) Speed Aneroid pressure h: 1300 Speed rpm : 750 4th rack travel in: 1300 rpm : 0.00...1.00Speed Del.quantity cm3/: 286.0...292.0 1000 s: (283.0...295.0) rpm : 750 LOW IDLE 1 Control lever Speed rpm Del.quantity cm3/: 102.0...112.0 position degrees: 247...255 1000 s: (99.0...115.0) cm3 : 10.00 Testina: Spread Speed : 100 1000 s: (14.0) man Minimum rack trave: 6.50 Aneroid pressure h: rpm : 500 rpm : 300 Speed Del.quantity cm3/: 168.0...170.0 1000 s: (165.0...173.0) Rack travel in mm : 4.90...5.10 CONSTANT REGULATION rpm : 300...420 Speed BREAKAWAY TORQUE CONTROL Dimension a mm :? 1st version Torque control curve - 1st version 1mm rack travel less than rpm : 900 1st speed Rack travel in m: 14.10...14.20 full load rack tr: 12.60 rpm : 1040...1050 2nd speed rpm : 1000 Speed Rack travel in m: 13.60...13.80 : 750 3rd speed rpm STARTING FUEL DELIVERY Rack travel in m: 13.20...13.40 : 400 4th speed rpm Rack travel in m: 12.20...12.50 Speed rpm : 100 Del.quantity cm3/: 200.0...220.0 1000 s: (196.0...224.0) Aneroid/Altitude Compensator Test LOW IDLE : 300 1st version Speed rpm Rack travel in mm : 4.80...5.20 Setting Del.quantity cm3/: 20.0...26.0 : 900 Speed rpm 1000 s: (17.0...29.0) hPa : 1300 Pressure : 14.10...14.30 cm3 : 8.00Rack travel mm Spread 1000 s: (12.00) Measurement 1/min: 900 Remarks: Speed : MAN-NR. 3-7095 1st pressure hPa : -Rack travel in m: 8.90...9.10 Setting and blocking of pointer of

start-of-delivery sensor on cyl. 6 start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS Prestroke mm : 4.70...4.80 : (4.65...4.85) Rack travel in mm : 9.00...12.00 Note remarks : 6-2-4-1-5-3 Firing order Test sheet : MAN 11,9 x Edition : 16.01.91 Replaces : 0-60-120-180-240-300 Test oil : ISO-4113 Phasina : 0 402 736 819 Combination no. Tolerance + - ° : 0.50 (0.75) Injection pump Time to cyl. no. : 6 Pump designation : PES6P120A720/3LS7227 EP type number : 0 412 726 842 BASIC SETTING Governor rpm : 700Governor design. : RQ750PA981 1st speed : 0 421 801 566 Governer no. Rack travel in mm : 14.30...14.40 Customer-spec. information Del.guantity cm3/: 33.9...34.1 Customer : MAN 100 s: (33.6...34.4) : D2866 LXF Engine : 300.0 1st version kW Spread cm3 : 0.5: 1500 Rated speed 100 s: (0.9) TEST BENCH REQUIREMENTS 2nd speed rpm : 300.0Rack travel in mm: 4.2...4.6 Test oil Del.quantity cm3/: 2.0...2.6 inlet temp. °C : 38...42 100 s: (1.7...2.9) cm3 : 0.8 Overflow valve Spread : 1 417 413 025 100 s: (1.2) FULL LOAD DELIV. AT FULL LOAD STOP Inlet press., bar: 1.50 1st version Test nozzle holder : 1 688 901 105 assembly Speed rpm 339.0...341.0 Del.quantity 1000 : (336.0...344.0) Openina pressure, bar : 207...210 : 5.00 cm3 Spread 1000 : (9.00) Orifice plate diameter mm : 0,8 RATED SPEED 1st version : 1 680 750 015 Test lines Testing: Outside diameter 1st rack travel in: 13.30 x Wall thickness rom : 750...755 Speed x Length mm : 6.00x1.50x600 2nd rack travel in: 4.00 rpm : 776...789 Speed (A) Injection pump setting values 4th rack travel in: 950 : 0.00...1.00 Insp. values in parentheses Speed rpm Set equal delivery quant. per values Remarks:

: MAN-NR. 3-7119

APPLICATION

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Note remarks

Test sheet : PER 12,2 a1 Edition : 20.12.90

Replaces : -

Test oil : ISO-4113

Combination no. : 0 402 746 807

Injection pump

Pump designation : PES6P120A720RS7121 EP type number : 0 412 726 804

Governor

Governor design. : RQV250...1050PA793-2

Governer no. : 0 421 813 699

Customer—spec. information Customer : PERKINS

Engine : EAGLE LE DROPS

1st version kW : 300.0 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 1 688 901 019

Openina

pressure, bar : 207...210

Orifice plate

diameter mm : 0.8

Test lines : 1 680 750 067

Outside diameter x Wall thickness

x Length mm : 6.00X1.50X1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.80...4.90 : (4.75...4.95)

Rack travel in mm : 9.00...12.00

Firing order : 1- 4- 2- 6- 3- 5

Phasing : 0-60-120-180-240-300

Tolerance $+ - ^{\circ} : 0.50 (0.75)$

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 700

Rack travel in mm : 14.10...14.20

Del.quantity cm3/: 23.8...24.0

100 s: (23.5...24.3)

Spread cm3: 0.6

100 s: (0.9)

2nd speed rpm : 250.0

Rack travel in mm: 6.3...6.5

Del.quantity cm3/: 3.1...3.5 100 s: (2.8...3.8)

Spread cm3 : 0.3

100 s: (0.6)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250

travel mm : 0.90...1.30

2nd speed rpm : 350 travel mm : 2.90...3.50

3rd speed rpm: 700

travel mm : 4.00...4.60

4th speed rpm: 1000

travel mm : 7.40...7.60

5th speed rpm : 1100

travel mm : 8.80...9.20

GUIDE SLEEVE POSITION

Control-lever position Degree: -1

Speed rpm : 1070

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700 Aneroid pressure h: 900 Del.quantity : 238.0...240.0 1000 : (235.0...243.0)

cm3 : 6.00 Spread 1000 : (9.00)

RATED SPEED

1st version Control Lever

position degrees: 117...125

Testing:

1st rack travel in: 13.10 Speed rpm : 1080...1090

2nd rack travel in: 4.00

rpm : 1160...1190

4th rack travel in: 1250

rpm : 0.00...1.00 Speed

LOW IDLE 1 Control lever

position degrees: 80...&8

Testina:

Speed rpm : 100 Minimum rack trave: 7.80 : 250 rom

Rack travel in mm : 6.30...6.50

CONSTANT REGULATION

rpm : 250...520 Speed

Aneroid/Altitude Compensator Test

1st version

Setting

Speed : 500 rom hPa : 900 Pressure

Rack travel mm : 14.10...14.20

Measurement

Speed 1/min: 500

1st pressure hPa : -

Rack travel in m: 11.10...11.30 2nd pressure hPa : 690 Rack travel in m: 13.50...13.60 3rd pressure hPa : 370

Rack travel in m: 11.70...11.90

START CUT-OUT

1/min: 170 (190) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

H06

Aneroid pressure h: rpm_ : 500 Speed

Del.quantity cm3/: 160.0...162.0

1000 s: (157.0...165.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.10

rpm : 1080...1090 Speed

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 130.0...170.0 1000 s: (126.0...174.0)

Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 250
Rack travel in mm : 6.30...6.50
Del.quantity cm3/: 31.0...35.0

1000 s: (28.0...38.0)

cm3 : 3.00Spread

1000 s: (6.00)

Remarks:

Delivery-valve spring pre-tension 3.2...3.4 mm.

Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring preload on new delivery-valve holders

to 2.9...3.1 mm.

Setting and blocking of pointer of start-of-delivery sensor on cyl. 1

start of delivery

Note remarks

: MAC 12.0 a3 : 14.12.90 : 15.11.90 Test sheet Edition Replaces Test oil : ISO-4113

Combination no. : 0 402 746 852

Injection pump

Pump designation : PES6P120A720RS7157

: 0 412 726 814 EP type number

Governor

: RQV325...900PA909K Governor design.

: 0 421 815 210 Governer no.

Customer-spec. information

Customer : MACK TRUCKS

Engine : E7-400

: 298.0 1st version kW : 1800 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 2 417 413 011

Overflow

quantity min. 1/h: 160...170

Test nozzle holder

: 1 688 901 101 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

: 2.75...2.85 Prestroke mm

: (2.70...2.90)

Rack travel in mm: 10.50

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 900

Rack travel in mm : 15.80...15.90

Del.guantity cm3/: 27.5...27.7

100 s: (27.2...28.0)

cm3 : 0.5Spread

100 s: (0.9)

2nd speed rpm : 325.0 Rack travel in mm : 5.1...5.3 Del.quantity cm3/ : 4.0...4.6

100 s: (3.8...4.8)

Spread cm3 : 0.8100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 325 1st speed

: 1.20...1.40 travel mm

2nd speed

rpm : 450 : 2.80...3.20 travel mm

3rd speed rpm : 650

: 5.60...5.80 travel mm

4th speed rpm : 900

: 8.30...8.50 travel mm

: 1100 5th speed rpm

: 10.30...10.80 travel mm

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 900

Aneroid pressure h: 1200 Del.quantity : 275.0...277.0 Del.quantity : 2/3.0...280.0)

: 5.00 Spread cm3

1000 : (9.00)

RATED SPEED

1st version Control lever

position degrees: 58...66

Testina:

1st rack travel in: 14.80 Speed rpm : 940...970

2nd rack travel in: 4.00

rpm : 1130...1140 Speed

4th rack travel in: 1200

rpm : 0.00...1.00Speed

LOW IDLE 1 Control Lever

position degrees: 7...15

Testina:

rpm : 275 Speed Minimum rack trave: 6.30 rom

Rack travel in mm : 5.10...5.30

CONSTANT REGULATION

rpm : 325...520 Speed

TORQUE CONTROL

Dimension a mm :?

Torque control curve - 1st version

1st speed rpm : 900

Rack travel in m: 15.80...15.90

rpm : 625 2nd speed

Rack travel in m: 15.20...15.40

3rd speed rpm : 700

Rack travel in m: 15.40...15.60

4th speed

th speed rpm : 500 Rack travel in m: 0.00...13.50

Aneroid/Altitude

Compensator Test

1st version

Setting

: 900 Speed rom hPa : 1200 Pressure

: 15.80...15.90 Rack travel mm

Measurement

Speed $1/\min : 900$

1st pressure hPa : -

Rack travel in m: 8.50...8.90
2nd pressure hPa : 325
Rack travel in m: 10.20...10.30

3rd pressure hPa : 790

Rack travel in m: 13.80...14.20

START CUT-OUT

Speed

1/min: 275 (285)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200 : 625 man

Del.quantity cm3/: 302.5...308.5

1000 s: (299.5...311.5)

Spread

cm3 : 8.00 1000 s: (12.0)

Speed : 850 man

Del.quantity cm3/: 159.0...161.0 * 1000 s: (136.5...157.0)

Aneroid pressure h: -

Speed rpm : 400 Del.quantity cm3/: 157.5...161.5 1000 s: (155.5...163.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 14.80

rpm : 940...970 Speed

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 190.0...230.0 1000 s: (180.0...240.0)

Rack travel in mm : 10.80...11.40

LOW IDLE

Speed rpm : 325
Rack travel in mm : 5.10...5.30
Del.quantity cm3/ : 40.0...46.0
1000 s: (38.0...48.0)

cm3 : 8.00 Spread

1000 s: (12.00)

Remarks:

: MACK # 313GC5185-P6

Bow dimension:

Sliding-sleeve position = 37.0 mm * This test specification applies only to the engine/nozzle-and-holder

assemblies on an injection-pump test bench: setting for test equipment, check value for engine equipment.

H08

Note remarks

Test sheet : MAC 12,0 a4 : 14.12.90 : 15.11.90 Edition Replaces : ISO-4113 Test oil

Combination no. : 0 402 746 853

Injection pump

Pump designation : PES6P120A720RS7157

EP type number : 0 412 726 814

Governor

Governor design. : RQV325...900PA909-1K

: 0 421 815 211 Governer no.

Customer-spec. information

: MACK TRUCKS Customer

Engine : E7-350

: 261.0 1st version kW : 1800 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 2 417 413 011

Overflow.

quantity min. 1/h: 160...170

Test nozzle holder

: 1 688 901 101 assembly

Openina

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

: 2.75...2.85 : (2.70...2.90) Prestroke mm

Rack travel in mm: 10.50

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasina

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 900

Rack travel in mm : 13.60...13.70

Del.guantity cm3/: 23.1...23.3

100 s: (22.9...23.5)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 325.0 2nd speed Rack travel in mm: 4.7...4.9

Del.quantity cm3/: 4.0...4.6

100 s: (3.8...4.8)

cm3 : 0.8Spread

100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 325 1st speed

: 1.20...1.40 travel mm

2nd speed : 450 rpm

: 2.80...3.20 travel mm rpm : 650

3rd speed travel mm : 5.60...5.80

rpm : 900 4th speed

: 8.30...8.50 travel mm

: 1100 5th speed rpm

travel mm : 10.30...10.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 900 Speed

Aneroid F. Del.quantity 1000

Aneroid pressure h: 1200 Del.quantity : 231.5...233.5 1000 : (229.5...235.5)

: 5.00 Spread cm3

1000 : (9.00)

RATED SPEED

1st version Control Lever

position degrees: 58...66

Testina:

1st rack travel in: 12.60 : 940...970 Speed rpm

2nd rack travel in: 4.00

rpm : 1105...1115 Speed

4th rack travel in: 1200

rpm : 0.00...1.00Speed

LOW IDLE 1 Control Lever

position degrees: 7...15

Testina:

Speed rpm : 275 Minimum rack trave: 5.90 : 325 rpm Speed

Rack travel in mm : 4.70...4.90

CONSTANT REGULATION

rpm : 325...520 Speed

TORQUE CONTROL

Dimension a mm

Torque control curve - 1st version

1st speed rpm : 900

Rack travel in m: 13.60...13.70

2nd speed rpm : 625

Rack travel in m: 13.30...13.50

rpm : 500 3rd speed

Rack travel in m: 0.00...12.00

Aneroid/Altitude Compensator Test

1st version

Settina

: 900 Speed mqn hPa : 1200 Pressure

: 13.60...13.70 Rack travel mm

Measurement

1/min: 900 Speed

1st pressure hPa : -

Rack travel in m: 8.00...8.40

2nd pressure hPa : 325

Rack travel in m: 9.40...9.50

3rd pressure hPa : 685

Rack travel in m: 12.10...12.50

START CUT-OUT

1/min : 275 (285) Speed

H10

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200

: 625 Speed rpm

Del.quantity cm3/: 263.0...269.0 1000 s: (260.0...272.0)

cm3 : 8.00Spread

1000 s: (12.0)

: 850 Speed rpm

Del.quantity cm3/: 159.0...161.0 * 1000 s: (136.5...157.0)

Aneroid pressure h: -

: 400 Speed rpm

Del.quantity cm3/: 153.0...157.0 1000 s: (151.0...159.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.60

rpm : 940...970 Speed

STARTING FUEL DELIVERY

: 100 Speed rpm

Del.quantity cm3/: 175.0...215.0

1000 s: (165.0...225.0)

Rack travel in mm : 9.00...11.00

LOW IDLE

Speed rpm

Rack travel in mm : 4.70...4.90 Del.quantity cm3/: 40.0...46.0

1000 s: (38.0...48.0)

: 8.00 Spread cm3

1000 s: (12.00)

Remarks:

: MACK # 313GC5185-P2

Bow dimension:

Sliding-sleeve position = 37.0 mm * This test specification applies only to the engine/nozzle-and-holder assemblies on an injection-pump test bench: setting for test equipment, check value for engine equipment.

Note remarks

: FIA 9,5 a 1 Test sheet : 14.12.90 Edition : 8.6.90 Replaces : ISO-4113 Test oil

Combination no. : 0 402 746 857

Injection pump

Pump designation: PES6P120A720RS7177 EP type number : 0 412 726 823

Governor

Governor design: RQ275/1100PA915 : 0 421 801 478 Governer no.

Customer-spec. information Customer : IVECO-UNIC

: 8460.41.601 Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 1 688 901 105

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test Lines : 1 680 750 008

Outside diameter x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.00...5.10 Prestroke mm : (4.95...5.15)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

: 0.50 (0.75) Tolerance + - *

Time to cyl. no. : 1

BASIC SETTING

rpm: 1100 1st speed

Rack travel in mm : 12.30...12.40

Del.quantity cm3/: 18.3...18.5

100 s: (18.0...18.8)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 275.0
Rack travel in mm : 5.7...5.9
Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.5)

cm3 : 0.8Spread

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

rpm : 600 Speed

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100 Aneroid pressure h: 900

: 183.0...185.0 Del.quantity 1000 : (180.0...188.0)

: 5.00 Spread cm3

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rom Rack travel in mm: 20.0

Testing:

1st rack travel in: 11.30

rpm : 1145...1160 Speed

2nd rack travel in: 4.00

Speed rpm : 1230...1260 4th rack travel in: 1350 Speed rpm : 0.00...1.00

LOW IDLE 1 Setting point w/out bumper spring

Speed rpm : 275 Rack travel in mm : 5.8

Testing:

Speed : 100 TDM: Minimum rack trave: 7.30 rpm : 275

Rack travel in mm : 5.70...5.90

CONSTANT REGULATION

rpm : 330...370 Speed

TORQUE CONTROL

Dimension a mm

Torque control curve - 1st version,

1st speed rpm : 1100 Rack travel in m: 12.60...12.70

2nd speed rpm : 600

Rack travel in m: 12.60...12.80

Aneroid/Altitude Compensator Test

1st version

Setting

: 500 Speed rpm hPa : 900 Pressure

: 12.30...12.40 Rack travel mm

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 9.70...10.00 2nd pressure hPa : 320 Rack travel in m: 11.70...11.80

3rd pressure hPa : 260

Rack travel in m: 10.40...10.60

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

rpm : 500 Speed

Del.quantity cm3/: 119.0...121.0 1000 s: (116.0...124.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.30 peed rpm : 1145...1160 Speed

STARTING FUEL DELIVERY

Remarks:

APPLICATION

Omnibus

H12

Note remarks

: MAC 12,0 h3 Test sheet : 07.01.91 Edition Replaces : 15.11.90 : ISO-4113 Test oil

: 0 402 746 887 Combination no.

Injection pump

Pump designation : PES6P120A720RS7200

EP type number : 0 412 726 833

Governor

Governor design. : RQV325...975PA944-2K

: 0 421 815 237 Governer no.

Customer-spec. information

: MACK TRUCKS Customer

Engine : E7-300A

1st version kW : 224.0 Rated speed : 1950

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 2 417 413 011

Overflow

quantity min. 1/h: 160...170

Test nozzle holder

: 1 688 901 101 assembly

Openina

: 207...210 pressure, bar

Orifice plate

diameter mm : 0.6

: 1 680 750 008 Test lines

Outside diameter x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 22...24

Prestroke mm : 2.75...2.85 : (2.70...2.90) Rack travel in mm : 11.00...13.00

: 1-5-3-6-2-4 Firing order

Phasing : 0-60-120-180-240-300

: 0.50 (0.75) Tolerance + - °

Time to cyl. no. : 1

BASIC SETTING

rpm: 975 1st speed

Rack travel in mm : 13.00...13.10

Del.guantity cm3/: 22.5...22.7

100 s: (22.2...23.0)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 340.02nd speed Rack travel in mm: 4.8...5.0

Del.quantity cm3/: 3.1...3.7 100 s: (2.9...3.9)

cm3 : 0.8Spread

100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 325

: 1.40...1.60 travel mm

rpm : 450 2nd speed

: 2.80...3.20 rpm : 950 travel mm

3rd speed

: 7.90...8.10 travel mm

rpm : 1200 4th speed

: 10.20...10.60 travel mm

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 975 Speed

Aneroid pressure h: 1200

: 225.0...227.0 1000 : (222.0...230.0) Del.quantity

: 5.00 Spread cm3

1000 : (9.00)

RATED SPEED

1st version Control lever position degrees: 57...65 Testing: 1st rack travel in: 12.00 rpm : 1015...1045 Speed 2nd rack travel in: 4.00 Speed rpm : 1180...1190 4th rack travel in: 1300 Speed rpm : 0.00...1.00LOW IDLE 1 Control Lever position degrees: 8...16 Testina: Speed rpm Minimum rack trave: 6.00 Speed rpm Rack travel in mm : 4.80...5.00 CONSTANT REGULATION : 325...520 Speed rpm TORQUE CONTROL Dimension a mm :? Torque control curve - 1st version 1st speed rpm : 975 Rack travel in m: 13.00...13.10 2nd speed rpm : 600 Rack travel in m: 12.20...12.40 3rd speed rpm : 500 Rack travel in m: 11.20...11.60 Aneroid/Altitude Compensator Test 1st version Setting Speed : 975 rpm hPa : 1200 Pressure : 13.00...13.10 Rack travel mm Measurement 1/min: 975 Speed 1st pressure hPa : -Rack travel in m: 8.00...8.40 2nd pressure hPa : 325 Rack travel in m: 9.40...9.50 3rd pressure hPa : 640 Rack travel in m: 11.70...12.10 START CUT-OUT 1/min : 250 (255) Speed

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 12.00 Speed rpm : 1015...1045

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 170.0...210.0
1000 s: (160.0...220.0)
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm: 340
Rack travel in mm: 4.80...5.00
Del.quantity cm3/: 31.0...37.0
1000 s: (29.0...39.0)
Spread cm3: 8.00
1000 s: (12.00)

Remarks:

: MACK # 313GC5188-P8

Bow dimension: Sliding-sleeve position = 37.0 mm * This test specification applies only to the engine/nozzle-and-holder assemblies on an injection-pump test bench: setting for test equipment, check value for engine equipment.

FUEL DELIVERY CHARACTERISTICS

Note remarks

: MAC 12.0 h : 14.12.90 Test sheet Edition : 15.11.90 Replaces : ISO-4113 Test oil

: 0 402 746 890 Combination no.

Injection pump

Pump designation : PES6P120A720RS7200 : 0 412 726 833 EP type number

Governor

Governor design. : RQV325...875PA944-5K

: 0 421 815 240 Governer no.

Customer-spec. information

: MACK TRUCKS Customer

Engine : EM7-275

: 202.0 1st version kW : 1750 Rated speed

TEST BENCH REQUIREMENTS

Test oil

: 38...42 inlet temp. °C

Overflow valve

: 2 417 413 011

Overflow

quantity min. 1/h: 160...170

Test nozzle holder

: 1 688 901 101 assembly

Openina .

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

: 1 680 750 008 Test lines

Outside diameter

x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 22...24

Prestroke mm

: 3.25...3.35 : (3.20...3.40)

Rack travel in mm : 11.00...13.00 Firing order : 1-5-3-6-2-4

Firing order

Phasing

: 0-60-120-180-240-300

Tolerance + - °

: 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rom: 875

Rack travel in mm : 13.20...13.30

Del.quantity cm3/: 23.5...23.7

100 s: (23.2...24.0)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 340.0 2nd speed Rack travel in mm: 4.6...4.8

Del.quantity cm3/: 3.1...3.7 100 s: (2.9...3.9)

cm3 : 0.8 Spread 100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 325 1st speed

1.40...1.60 travel mm

rpm : 450 2nd speed

travel mm : 3.30...3.70 rpm : 700 3rd speed

: 7.90...8.30 travel mm

900 4th speed rpm :

9.40...9.60 travel mm

rpm : 1050 5th speed

: 10.60...11.00 travel mm

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 875 Speed

Aneroid pressure h: 1200

: 235.5...237.5 Del.quantity 1000 : (232.5...240.5)

: 5.00 Spread cm3

1000 : (9.00) RATED SPEED

1st version Control lever

position degrees: 60...68

Testina:

1st rack travel in: 12.20 Speed rpm : 915...945 2nd rack travel in: 4.00

rpm : 1065...1075 Speed

4th rack travel in: 1200

rom : 0.00...1.00Speed

LOW IDLE 1 Control lever

position degrees: 8...16

Testing:

Speed : 275 rpm Minimum rack trave: 6.00 Speed : 340 mon

Rack travel in mm : 4.60...4.80

CONSTANT REGULATION

rpm : 325...520 Speed

TORQUE CONTROL

Dimension a mm :?

Torque control curve - 1st version

1st speed rpm : 875

Rack travel in m: 13.20...13.30

rpm : 510 2nd speed

Rack travel in m: 13.80...14.00

rpm : 600 3rd speed

Rack travel in m: 13.80...14.00

4th speed rpm : 450

Rack travel in m: 12.90...13.30

Aneroid/Altitude Compensator Test

1st version

Setting

rpm : 510 hPa : 1200 Speed rpm Pressure

Rack travel mm : 13.80...14.00

Measurement

1/min: 510 Speed

1st pressure hPa : -Rack travel in m: 8.40...8.80

2nd pressure hPa : 310

Rack travel in m: 10.10...10.20

3rd pressure hPa : 635

Rack travel in m: 12.60...13.00

START CUT-OUT

1/min : 250 (255) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200

Speed rpm : 510 Del.quantity cm3/ : 311.0...317.0

1000 s: (308.0...320.0)

cm3 : 8.00Spread 1000 s: (12.0)

Speed rpm : 875 Del.quantity cm3/ : 199.0...201.0 * 1000 s: (150.0...172.0)

Aneroid pressure h: rpm : 400 Speed

Del.quantity cm3/: 155.5...159.5 1000 s: (153.5...161.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.20

rpm : 915...945 Speed

STARTING FUEL DELIVERY

Speed rpm

Del.quantity cm3/: 170.0...210.0 1000 s: (160.0...220.0) Rack travel in mm: 19.00...21.00

LOW IDLE

Speed rpm : 340 Rack travel in mm : 4.60...4.80 Del.quantity cm3/: 31.0...37.0

1000 s: (29.0...39.0)

cm3 : 8.00 Spread

1000 s: (12.00)

Remarks:

: MACK # 313GC5188-P4

Bow dimension:

Sliding-sleeve position = 37.0 mm* This test specification applies only to the engine/nozzle-and-holder assemblies on an injection pump test bench: setting for test equipment,

check value for engine equipment.

Note remarks

Test sheet : MAC 12,0 h4 : 07.01.91 Edition : 15.11.90 Replaces Test oil : ISO-4113

Combination no. : 0 402 746 891

Injection pump

Pump designation : PES6P120A720RS7200 EP type number : 0 412 726 833

Governor Governor design. : RQV325...875PA944-6K

: 0 421 815 241 Governer no.

Customer-spec. information

Customer : MACK TRUCKS

Engine : EM7-250

: 187.0 1st version kW : 1750 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 2 417 413 011

Overflow

quantity min. 1/h: 160...170

Test nozzle holder

: 1 688 901 101 assembly

Opening |

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

Test Lines : 1 680 750 008

Outside diameter

x Wall thickness

x Length mm : 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 22...24

: 3.25...3.35 : (3.20...3.40) Prestroke mm

Rack travel in mm : 11.00...13.00 Firing order : 1-5-3-6-2-4

Phasina : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

rpm: 875 1st speed

Rack travel in mm : 12.50...12.60

Del.quantity cm3/: 21.5...21.7

100 s: (21.2...22.0)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 340.02nd speed Rack travel in mm : 4.6...4.8 Del.quantity cm3/ : 3.1...3.7

100 s: (2.9...3.9)

Spread cm3 : 0.8100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 325

1.40...1.60 travel mm 2nd speed : 450 man

: 3.30...3.70 travel mm

: 700 3rd speed rpm

: 7.90...8.30 travel mm

4th speed : 900 rpm travel mm 9.40...9.60

: 1050 5th speed rpm

travel mm : 10.60...11.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 875 Aneroid pressure h: 1200

: 215.0...217.0 Del.quantity

1000 : (212.0...220.0)

: 5.00 Spread ϵ mo

1000 : (9.00)

RATED SPEED 1st version Control lever position degrees: 62...70 Testing: 1st rack travel in: 11.50 rpm : 915...945 Speed 2nd rack travel in: 4.00 rpm : 1045...1055 Speed 4th rack travel in: 1200 Speed rom : 0.00...1.00 LOW IDLE 1 Control lever position degrees: 8...16 Testing: : 275 Speed rpm Minimum rack trave: 6.00 : 340 Speed rpm Rack travel in mm : 4.60...4.80 CONSTANT REGULATION rpm : 325...520 Speed TORQUE CONTROL Dimension a mm :? Torque control curve - 1st version rpm : 875 1st speed Rack travel in m: 12.50...12.60 rpm : 510 2nd speed Rack travel in m: 13.40...13.60 rpm : 600 3rd speed Rack travel in m: 13.40...13.60 4th speed rpm : 450 Rack travel in m: 12.60...13.00 Aneroid/Altitude Compensator Test 1st version Setting Speed : 510 rpm hPa : 1200 Pressure : 13.40...13.60 Rack travel mm Measurement Speed 1/min: 510 1st pressure hPa : -Rack travel in m: 8.50...8.90 2nd pressure hPa : 285

Rack travel in m: 10.00...10.10 Rack travel in m: 12.30...12.70

Speed 1/min : 250 (255) FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1200 Speed rpm : 510 Del.quantity cm3/ : 291.5...297.5 1000 s: (288.5...300.5) cm3 : 8.00 Spread 1000 s: (12.0) Speed rpm : 875 Del.quantity cm3/: 199.0...201.0 * 1000 s: (150.0...172.0) Aneroid pressure h: rpm : 400 Speed Del.quantity cm3/: 153.0...157.0 1000 s: (151.0...159.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 11.50 rpm : 915...945 Speed STARTING FUEL DELIVERY Speed rpm Del.quantity cm3/: 170.0...210.0 1000 s: (160.0...220.0) Rack travel in mm : 19.00...21.00 LOW IDLE Speed : 340 rpm Rack travel in mm : 4.60...4.80 Del.quantity cm3/: 31.0...37.0 1000 s: (29.0...39.0) cm3 : 8.00Spread 1000 s: (12.00) Remarks: : MACK # 313GC5188-P2 Bow dimension:

Sliding-sleeve position = 37.0 mm * This test specification applies only to the engine/nozzle-and-holder assemblies on an injection-pump test bench: setting for test equipment, check value for engine equipment.

3rd pressure hPa : 570

Note remarks

: MAC 12.0 h5 : 07.01.91 Test sheet Edition Replaces : 15.11.90 : ISO-4113 Test oil

Combination no. : 0 402 746 892

Injection pump

Pump designation : PES6P120A720RS7200 EP type number : 0 412 726 833

Governor

Governor design. : RQV325...975PA944-7K

: 0 421 815 242 Governer no.

Customer-spec. information

Customer : MACK TRUCKS

: E7-250A Engine

1st version kW : 180.0 Rated speed : 1950

TEST BENCH REQUIREMENTS

Test oil

: 38...42 inlet temp. °C

Overflow valve

: 2 417 413 011

Overflow

quantity min. 1/h: 160...170

Test nozzle holder

: 1 688 901 101 assembly

Opening

: 207...210 pressure, bar

Orifice plate

: 0,6 diameter mm

Test lines : 1 680 750 008

Outside diameter x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 22...24

: 3.25...3.35 Prestroke mm : (3.20...3.40)
Rack travel in mm : 11.00...13.00
Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rom: 975

Rack travel in mm : 12.30...12.40

Del.guantity cm3/: 20.5...20.7

100 s: (20.2...21.0)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 340.0Rack travel in mm : 4.8...5.0 Del.quantity cm3/: 3.1...3.7

100 s: (2.9...3.9)

Spread cm3 : 0.8100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 325 1st speed

: 1.40...1.60 travel mm

rpm : 450 2nd speed

: 2.80...3.20 travel mm

rpm : 950 3rd speed

: 7.90...8.10 travel mm

: 1200 4th speed rpm

: 10.20...10.60 travel mm

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 975 Speed

Aneroid pressure h: 1200

205.5...207.5 1000 : (202.5...210.5) Del.quantity

: 5.00 Spread cm3

1000 : (9.00)

RATED SPEED

1st version Control Lever position degrees: 57...65 Testing: 1st rack travel in: 11.30 Speed rpm: 1015...1045 2nd rack travel in: 4.00 rpm : 1175...1185 Speed 4th rack travel in: 1300 rom : 0.00...1.00Speed LOW IDLE 1 Control lever position degrees: 8...16 Testing: Speed : 275 rpm Minimum rack trave: 6.00 Speed rpm Rack travel in mm : 4.80...5.00 CONSTANT REGULATION rpm : 325...520 Speed TORQUE CONTROL Dimension a mm :? Torque control curve - 1st version 1st speed rpm : 975 Rack travel in m: 12.30...12.40 2nd speed rpm : 600 Rack travel in m: 12.10...12.30 rpm : 800 3rd speed Rack travel in m: 12.30...12.50 4th speed rpm : 500 Rack travel in m: 11.40...11.80 Aneroid/Altitude Compensator Test 1st version Setting : 975 Speed rom hPa : 1200 Pressure Rack travel mm : 12.30...12.40 Measurement 1/min: 975 Speed 1st pressure hPa : -Rack travel in m: 8.50...8.90 2nd pressure hPa : 330 Rack travel in m: 9.70...9.80 3rd pressure hPa : 570 Rack travel in m: 11.40...11.80 START CUT-OUT

1/min: 250 (255)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200 Speed rpm : 600

Del.quantity cm3/: 233.0...239.0 1000 s: (230.0...242.0)

cm3 : 8.00Spread 1000 s: (12.0) : 875 Speed rpm

Del.quantity cm3/: 199.0...201.0 * 1000 s: (150.0...172.0)

Aneroid pressure h: rpm : 400 Speed

Del.quantity cm3/: 154.0...158.0 1000 s: (152.0...160.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 11.30

rpm : 1015...1045 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 170.0...210.0

1000 s: (160.0...220.0)

Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 340 Rack travel in mm : 4.80...5.00 Del.quantity cm3/: 31.0...37.0 1000 s: (29.0...39.0) Spread cm3 : 8.00

1000 s: (12.00)

Remarks:

: MACK # 313GC5188-P6

Bow dimension:

Sliding-sleeve position = 37.0 mm * This test specification applies only to the engine/nozzle-and-holder assemblies on an injection-pump test bench: setting for test equipment, check value for engine equipment.

H20

Speed

ž

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks

: MAC 12,0 h2 Test sheet Edition : 07.01.91 : 15.11.90 Replaces Test oil : ISO-4113

Combination no. : 0 402 746 896

Injection pump

Pump designation : PES6P12DA72DRS7200 : 0 412 726 833

EP type number

Governor

: RQV325...900PA944-11 Governor design.

: 0 421 815 260 Governer no.

Customer-spec. information

: MACK TRUCKS Customer

Engine : F7-350

: 261.0 1st version kW Rated speed : 1800

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 2 417 413 011

Overflow

quantity min. 1/h: 160...170

Test nozzle holder

: 1 688 901 101 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

: 1 680 750 008 Test lines

Outside diameter x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 22...24

Prestroke mm : 2.75...2.85 : (2.70...2.90) Rack travel in mm : 11.00...13.00

Firing order : 1-5- 3- 6- 2- 4

Phasina : 0-60-120-180-240-300

Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rom: 900

Rack travel in mm : 14.50...14.60

Del.quantity cm3/: 27.7...27.9

100 s: (27.4...28.2)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 340.02nd speed Rack travel in mm: 4.6...4.8

Del.quantity cm3/: 3.1...3.7

100 s: (2.9...3.9)

cm3 : 0.8 Spread 100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 325

: 1.40...1.60 travel mm

rpm : 450 2nd speed

2.80...3.20 travel mm

rpm : 700 3rd speed

: 6.00...6.40 travel mm

rpm : 900 4th speed

: 8.50...8.70 travel mm

rpm : 1050 5th speed

9.80...10.20 travel mm

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 900 Speed

Aneroid pressure h: 1200

: 277.5...279.5 Del.quantity : (274.5...282.5)

1000 : 5.00 Spread cm3

: (9.00) 1000

RATED SPEED START CUT-OUT 1st version Control lever Speed 1/min: 250 (255) position degrees: 59...67 FUEL DELIVERY CHARACTERISTICS Testing: 1st rack travel in: 13.50 rpm : 940...970 Speed 1st version 2nd rack travel in: 4.00 Aneroid pressure h: 1200 rpm : 1115...1125 Speed Speed rpm : 625 Del.quantity cm3/: 290.0...296.0 1000 s: (287.0...299.0) 4th rack travel in: 1200 rpm : 0.00...1.00 Speed cm3 : 8.00 Spread 1000 s: (12.0) LOW IDLE 1 Control Lever : 875 Speed rpm Del.quantity cm3/: 199.0...201.0 * position degrees: 8...16 1000 s: (180.5...207.0) Testing: Aneroid pressure h: -Speed rpm : 400 Del.quantity cm3/: 150.0...154.0 1000 s: (148.0...156.0) Speed : 275 rom Minimum rack trave: 6.00 Speed rom : 340 Rack travel in mm : 4.60...4.80 CONSTANT REGULATION BREAKAWAY rpm : 325...520 Speed 1st version TORQUE CONTROL 1mm rack travel less than Dimension a mm :? Torque control curve - 1st version full load rack tr: 13.50 1st speed rpm : 900 rpm : 940...970 Speed Rack travel in m: 14.50...14.60 rpm : 625 2nd speed STARTING FUEL DELIVERY Rack travel in m: 13.80...14.00 3rd speed rpm : 800 Rack travel in m: 14.20...14.40 4th speed rpm : 675 Rack travel in m: 13.80...14.00 : 500 5th speed rpm Rack travel in m: 12.30...12.70 LOW IDLE Aneroid/Altitude Compensator Test Speed rpm Rack travel in mm : 4.60...4.80 Del.quantity cm3/: 31.0...37.0 1000 s: (29.0...39.0) 1st version cm3 : 8.00 Setting Spread 1000 s: (12.00) Speed : 900 rom hPa : 1200 Pressure Rack travel mm : 14.50...14.60 Remarks: : MACK # 313GC5188-P12 Measurement Speed 1/min: 900 Bow dimension: Sliding-sleeve position = 37.0 mm * This test specification applies only 1st pressure hPa : to the engine/nozzle-and-holder Rack travel in m: 8.10...8.50 assemblies on an injection-pump test 2nd pressure hPa : 400 Rack travel in m: 9.80...9.90 3rd pressure hPa : 775 bench: setting for test equipment, check value for engine equipment.

Rack travel in m: 12.60...13.00

Note remarks

: MAC 12,0 h1 Test sheet Edition : 14.12.90 : 15.11.90 Replaces Test oil : ISO-4113

: 0 402 746 897 Combination no.

Injection pump

Pump designation : PES6P120A720RS7200 : 0 412 726 833 EP type number

Governor

: RQV325...875PA944-12 Governor design.

: 0 421 815 261 Governer no.

Customer-spec. information

Customer : MACK TRUCKS

: EM7-300 Engine

1st version kW : 224.0 : 1750 Rated speed

TEST BENCH REQUIREMENTS

Test oil

: 38...42 inlet temp. °C

Overflow valve

: 2 417 413 011

Overflow

quantity min. 1/h: 160...170

Test nozzle holder

: 1 688 901 101 assembly

Openina

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter

x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 22...24

: 3.25...3.35 Prestroke mm

: (3.20...3.40)

Rack travel in mm : 11.00...13.00

: 1-5-3-6-2-4 Firing order

Phasing : 0-60-120-180-240-300

Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

rpm: 875 1st speed

Rack travel in mm : 14.00...14.10

Del.guantity cm3/: 25.0...25.2

100 s: (24.7...25.5)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 340.02nd speed Rack travel in mm: 4.6...4.8

Del.quantity cm3/: 3.1...3.7 100 s: (2.9...3.9)

cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

Spread

325 1st speed rpm :

: 1.40...1.60 travel mm

: 450 2nd speed rpm

3.30...3.70 travel mm

rpm : 700 3rd speed

: 7.90...8.30 travel mm

rpm : 900 4th speed

: 9.40...9.60 travel mm

5th speed : 1050 rpm

travel mm 10.60...11.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 875

Aneroid pressure h: 1200

: 250.0...252.0

Del.quantity 1000 : (247.0...255.0)

Spread cm3 : 5.00

: (9.00) 1000

RATED SPEED

1st version Control lever

position degrees: 61...69

Testing:

1st rack travel in: 13.00 rpm : 915...945 Speed

2nd rack travel in: 4.00 rpm : 1075...1085 Speed

4th rack travel in: 1200

Speed rpm : 0.00...1.00

LOW IDLE 1 Control Lever

position degrees: 8...16

Testing:

Speed : 275 riom: Minimum rack trave: 6.00 rpm : 340 Speed

Rack travel in mm : 4.60...4.80

CONSTANT REGULATION

rpm : 325...520 Speed

TORQUE CONTROL

Dimension a mm :?

Torque control curve - 1st version

1st speed rpm : 875

Rack travel in m: 14.00...14.10

: 510 2nd speed rpm

Rack travel in m: 14.70...14.90

3rd speed rpm : 575

Rack travel in m: 14.70...14.90

4th speed rpm : 450

Rack travel in m: 13.80...14.20

Aperoid/Altitude

Compensator Test

1st version

Setting

Speed : 510 MC Pressure hPa : 1200

: 14.70...14.90 Rack travel mm

Measurement

Speed 1/min : 510

1st pressure hPa : -

Rack travel in m: 8.70...9.10

2nd pressure hPa : 370

Rack travel in m: 10.30...10.40

3rd pressure hPa : 760

Rack travel in m: 13.30...13.70

START CUT-OUT

Speed 1/min : 250 (255)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200

Speed rpm : 510
Del.quantity cm3/: 328.0...334.0
1000 s: (325.0...337.0)

cm3 : 8.00Spread 1000 s: (12.0)

: 875 Speed rpm

Del.quantity cm3/: 199.0...201.0 * 1000 s: (159.5...183.0)

Aneroid pressure h: rpm : 400 Speed

Del.quantity cm3/: 156.0...160.0 1000 s: (154.0...162.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 13.00 rpm : 915...945 Speed

STARTING FUEL DELIVERY

Speed COA

Del.quantity cm3/ : 190.0...230.0 1000 s: (180.0...240.0)

Rack travel in mm : 19.00...21.00

LOW IDLE

rpm : 340

Rack travel in mm : 4.60...4.80 Del.quantity cm3/: 31.0...37.0 1000 s: (29.0...39.0)

Spread cm3 : 8.00

1000 s: (12.00)

Remarks:

: MACK # 313GC5188-P10

Bow dimension:

Sliding-sleeve position = 37.0 mm* This test specification applies only to the engine/nozzle-and-holder assemblies on an injection-pump test bench: setting for test equipment, check value for engine equipment.

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks

Test sheet : ENA 11,9 L Edition : 18.01.91 Replaces

Test oil : ISO-4113

: 0 402 746 898 Combination no.

injection pump

Pump designation : PES6P120A320RS7215

EP type number

: 0 412 726 838

Governor

Governor design. : RQV250...1000PA797

: 0 421 813 876 Governer no.

Customer-spec. information : ENASA Customer

: 96 R1 FX Engine

: 294.0 1st version kW : 2000 Rated speed

TEST BENCH REQUIREMENTS

Test oil

: 38...42 inlet temp. °C

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter x Wall thickness

: 6.00x1.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.20...5.30 Prestroke mm

: (5.15...5.35)

Rack travel in mm : 9.00...12.00 : 1-5-3-6-2-4 Firing order

Phasing : 0-60-120-180-240-300

Tolerance + - * : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 600

Rack travel in mm : 13.00...13.10

Del.guantity cm3/: 28.7...28.9

100 s: (28.4...29.2)

cm3 : 0.5Spread

100 s: (0.9)

2nd speed rpm : 250.0 Rack travel in mm : 5.6...6.0 Del.quantity cm3/: 1.0...1.6

100 s: (0.7...1.9) cm3 : 0.8

Spread 100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 250 1st speed

: 1.00...1.40 travel mm

rpm : 350 2nd speed

: 2.10...2.60 travel mm

rpm : 700 3rd speed

travel mm : 4.70...5.30

: 1055 4th speed rom

: 7.90...8.10 travel mm

rpm : 1145 5th speed

travel mm : 9.00...9.40

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1 rpm : 1070

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 600Speed Aneroid pressure h: 1200 Del.quantity : 287.0...289.0 1000 : (284.0...292.0)

: 5.00 cm3 Spread

1000 : (9.00)

RATED SPEED

1st version Control lever

position degrees: 102...110

Testing:

1st rack travel in: 12.00

rpm : 1050...1060 Speed

2nd rack travel in: 4.00

Speed rpm : 1135...1165 4th rack travel in: 1250

rpm : 0.00...1.00 Speed

LOW IDLE 1 Control Lever

position degrees: 73...81

Testing:

: 100 Speed rom Minimum rack trave: 5.00 : 250 Speed COM

Rack travel in mm : 3.30...3.70

CONSTANT REGULATION

rpm : 250...320 Speed

Aneroid/Altitude Compensator Test

1st version Setting

: 500 Speed rpm hPa : 1200 Pressure

: 13.00...13.10 Rack travel mm

Measurement

 $1/\min : 500$ Speed

1st pressure hPa : -

Rack travel in m: 10.30...10.70

2nd pressure hPa : 880

Rack travel in m: 12.40...12.50

3rd pressure hPa : 675

Rack travel in m: 11.10...11.40

START CUT-OUT

1/min: 170 (190) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200 Speed rpm : 900

Del.quantity cm3/: 280.0...286.0 1000 s: (277.0...289.0)

Aneroid pressure h: -

Speed rpm: 500 Del.quantity cm3/: 201.0...204.0

1000 s: (198.0...207.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.00 peed rpm : 1050...1060 Speed

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 135.0...155.0 1000 s: (131.0...159.0)

Rack travel in mm : 19.50...21.00

LOW IDLE

rpm : 250 Speed

Rack travel in mm : 3.30...3.70

Remarks:

Delivery-valve spring pre-tension

3.2...3.4 mm.

Permissible alteration of 3.0...3.5 mm

Note remarks

: FIA 9,5 a 2 : 01.02.91 Test sheet Edition

Replaces

Test oil : ISO-4113

Combination no. : 0 402 746 900

Injection pump

Pump designation: PES6P120A720RS7177

EP type number : 0 412 726 823

Governor

Governor design: RQ275/1100PA915-1

: 0 421 801 551 Governer no.

Customer—spec. information

Customer : IVECO-UNIC

Engine : 8460,41,601

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 105 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 008

Outside diameter x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ___

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10

: (4.95...5.15)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

Phasing : 0-60-120-180-240-300

Tolerance + - * : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1100

Rack travel in mm : 12.10...12.20

Del.quantity cm3/: 18.3...18.5

100 s: (18.0...18.8)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 275.0
Rack travel in mm : 5.4...5.6
Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.5)

cm3 : 0.8Spread

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position Degree: -2

rpm : 600 Speed

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1100 Speed

Aneroid pressure h: 900

Del.quantity : 183.0...185.0 1000 : (180.0...188.0)

: 5.00 Spread cm3

: (9.00) 1000

RATED SPEED

1st version

Setting point:

: 600 Speed rpm

Rack travel in mm : 20.0

Testing:

1st rack travel in: 11.10

Speed rpm: 1145...1160 2nd rack travel in: 4.00

Speed rpm : 1230...1260

4th rack travel in: 1350 Speed rpm : 0.00...1.00 LOW IDLE 1 Setting point w/out bumper spring rpm : 275 Speed Rack travel in mm: 5.5 Testing: rpm : 100 Speed Minimum rack trave: 7.00 Speed rpm : 275 Rack travel in mm : 5.40...5.60 Rack travel in mm : 2.00 rpm : 330...370 Speed TORQUE CONTROL Dimension a mm : -Torque control curve - 1st version 1st speed rpm : 1100 Rack travel in m: 12.50...12.60 2nd speed rpm : 600 Rack travel in m: 12.50...12.70 Aneroid/Altitude Compensator Test 1st version Setting Speed rpm : 500 hPa : 900 Pressure Rack travel mm : 12.10...12.20 Measurement 1/min: 500 Speed 1st pressure hPa : -Rack travel in m: 9.30...9.50 2nd pressure hPa : 300 Rack travel in m: 11.40...11.50 3rd pressure hPa : 230 Rack travel in m: 9.90...10.10 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/: 108.0...110.0 1000 s: (105.0...113.0) **BREAKAWAY**

1st version

J01

1mm rack travel less than

full load rack tr: 11.10

Speed STARTING FUEL DELIVERY Speed rpm Del.quantity cm3/: 140.0...170.0 1000 s: (136.0...174.0) Remarks:

rpm : 1145...1160

: 100

Note remarks

Test sheet ; UNI 9,5 g : 16.01.91 Edition

Replaces Test oil

: TSO-4113

Combination no. : 0 402 746 904

Injection pump

Pump designation : PES6P120A720RS7154

EP type number

: 0 412 726 811

Governor

Governor design. : RQ275/1100PA980

Governer no.

: D 421 801 555

Customer-spec. information Customer

: IVECO-UNIC

Engine

: 8460.41.101

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 1 688 901 105

Opening.

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

: 1 680 750 008 Test Lines

Outside diameter

x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10

: (4.95...5.15)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasina

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1100

Rack travel in mm : 11.60...11.70

Del.quantity cm3/: 19.3...19.5

100 s: (19.0...19.8)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 275.0 2nd speed

Rack travel in mm : 4.7...5.1 Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.5)

cm3 : 0.8Spread

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position Degree: -2

Speed rpm: 600 Rack travel in mm: 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Aneroid pressure h: 900

Del.quantity : 193.0...(98.0)

: 5.00 Spread cm3

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm: 20.0

Testina:

1st rack travel in: 10.60

rpm : 1145...1160 Speed

2nd rack travel in: 4.00

rpm : 1225...1255 Speed

4th rack travel in: 1350 rpm : 0.00...1.00 Speed LOW IDLE 1 Setting point w/out bumper spring Speed rpm: 275 Rack travel in mm: 4.7 Testing: Speed man : 100 Minimum rack trave: 7.30 rpm : 275 Speed Rack travel in mm : 4.60...4.80 Rack travel in mm: 2.00 rpm : 330...370 Speed TORQUE CONTROL Dimension a mm Torque control curve - 1st version 1st speed rpm : 1100 Rack travel in m: 11.60...11.70 rpm : 600 2nd speed Rack travel in m: 11.60...11.80 Aneroid/Altitude Compensator Test 1st version Settina : 500 Speed man hPa : 900 Pressure Rack travel mm : 11.60...11.70 Measurement 1/min: 500 Speed 1st pressure hPa : -Rack travel in m: 8.80...10.00 2nd pressure hPa : 415 Rack travel in m: 10.90...11.00 3rd pressure hPa : 250 Rack travel in m: 9.40...9.70 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/: 127.0...129.0 1000 s: (124.0...132.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 10.60

Speed rpm : 1145...1160

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 110.0...130.0 1000 s: (106.0...134.0)

Remarks:

J03

Note remarks

: CUM 8,3 D 4 : 25.01.91 Test sheet Edition Replaces : 06.07.90 : ISO-4113 Test oil

: 0 403 436 107 Combination no.

Injection pump

Pump designation : PES6MW100/120RS1143

: 0 413 406 137 EP type number

Governor

: RQV350...1100MW82-2 Governor design.

: 0 420 083 161 Governer no.

Customer-spec. information : CUMMINS/US Customer

: 6 CTA Engine

1st version kW : 186.0 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 017 assembly

Openina

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

: 1 680 750 014 Test Lines

Outside diameter x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.05...3.15 : (3.00...3.20)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

Phasina : 0-60-120-180-240-300

Tolerance $+ - \circ : 0.50 (0.75)$

Time to cyl. no. : 1

BASIC SETTING

1st speed rom: 1100

Rack travel in mm : 12.70...12.80

Del.quantity cm3/: 15.0...15.2

100 s: (14.8...15.4)

cm3 : 0.3Spread

100 s: (0.6)

2nd speed rpm : 350.0 Rack travel in mm : 7.6...7.7 Del.quantity cm3/: 1.6...2.0

100 s: (1.4...2.2)

cm3 : 0.3Spread 100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 1250 1st speed

travel mm : 9.00...9.40 rpm : 1140 2nd speed

travel mm : 7.80...8.00

3rd speed rpm : 700

: 3.80...4.40 travel mm rpm : 350 4th speed

: 1.20...1.60 travel mm

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1100 Speed Aneroid pressure h: 900

: 150.0...152.0 Del.quantity

1000 : (148.0...154.0)

: 3.50 Spread cm3 1000 : (6.00)

RATED SPEED

1st version

Control Lever position degrees: 42...50 Testing: 1st rack travel in: 11.70 rpm : 1150...1160 2nd rack travel in: 4.00 rpm : 1240...1270 Speed 4th rack travel in: 1400 rpm : 0.00...1.00Speed LOW IDLE 1 Control lever position degrees: 12...20 Setting point w/out bumper spring rpm Rack travel in mm: 7.6 Testing: Speed rpm : 100 Minimum rack trave: 8.80 Speed rpm : 350 Rack travel in mm : 7.60...7.70 CONSTANT REGULATION rpm : 360...500 Speed TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1100 Rack travel in m: 12.70...12.80 2nd speed rpm : 700 Rack travel in m: 13.60...13.70 3rd speed rpm : 900 Rack travel in m: 12.90...13.20 Aneroid/Altitude Compensator Test 1st version Setting : 500 Speed rpm Pressure hPa : : 9.90...10.00 Rack travel mm Measurement Speed $1/\min : 500$ 1st pressure hPa : 300 Rack travel in m: 10.80...10.90

2nd pressure hPa : 570 Rack travel in m: 12.30...12.60 3rd pressure hPa : 900 Rack travel in m: 13.60...13.70 START CUT-OUT 1/min: 220 (240) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900 rpm : 700 Speed

Del.quantity cm3/: 159.0...161.0

1000 s: (157.0...163.0)

cm3 : 5.00Spread 1000 s: (7.0) Aneroid pressure h: -

rpm : 500 Speed Del.quantity cm3/: 77.0...79.0 1000 s: (75.0...81.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 11.70

rpm : 1150...1160 Speed

STARTING FUEL DELIVERY

: 100 Speed rpm

Del.quantity cm3/: 205.0...225.0

1000 s: (202.0...228.0)

Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 350 Rack travel in mm : 7.60...7.70 Del.quantity cm3/: 16.0...20.0 1000 s: (14.0...22.0) Spread cm3 : 3.50

1000 s: (5.50)

Remarks:

: CDC #3915168

Start-of-delivery mark/lock = 8.0° angular displacement of the cam after start of delivery of cylinder 1.

: 3.75...3.85 BOSCH INJ. PUMP TEST SPECIFICATIONS Prestroke mm : (3.70...3.90)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4 Note remarks Test sheet : IHC 7,6 V 3 Edition : 18.01.91 : 30.11.90 Replaces : ISO-4113 : 0-60-120-180-240-300 Test oil Phasing : 0.50 (0.75) : 0 403 446 266 Tolerance + - ° Combination no. BASIC SETTING Injection pump Pump designation : PES6MW100/320RS1185 : 0 413 406 170 EP type number 1st speed rpm: 800 Governor Governor design. : RQV350...1200MW46-35 Rack travel in mm : 13.50...13.60 : 0 420 083 229 Governer no. Del.quantity cm3/: 13.7...13.9 Customer-spec. information 100 s: (13.5...14.1) : NAVISTAR Customer : DTA-466 cm3 : 0.3Engine Spread 100 s: (0.6) 1st version kW : 186.0 : 2400 Rated speed rpm : 350.0 2nd speed TEST BENCH REQUIREMENTS Rack travel in mm: 6.0...6.2 Del.quantity cm3/: 1.4...1.8 100 s: (1.1...2.0) Test oil cm3 : 0.3 inlet temp. °C : 38...42 Spread 100 s: (0.5) Overflow valve : 2 417 413 038 (B) Setting of injection pump with governor Inlet press., bar: 2.80 GUIDE SLEEVE TRAVEL rpm : 1350 Test nozzle holder 1st speed : 1 688 901 101 : 8.80...9.20 assembly travel mm rpm : 1250 2nd speed : 7.90...8.10 travel mm **Opening** : 207...210 3rd speed rpm : 550 pressure, bar : 3.10...3.70 travel mm rpm : 350 : 1.30...1.70 Orifice plate 4th speed diameter mm : 0,6 travel mm FULL LOAD DELIV. AT FULL LOAD STOP Test Lines : 1 680 750 008 1st version Outside diameter Speed rpm : 800 Aneroid pressure h: 900 x Wall thickness x Length mm : 6.00X2.00X600 Del.quantity : 137.0...139.0 1000 : (135.0...141.0) (A) Injection pump setting values Insp. values in parentheses : 3.50 Spread cm3 1000 : (6.00) Set equal delivery quant. per values RATED SPEED BEGINNING OF DELIVERY 1st version

Control lever

position degrees: 105...113

Test pressure, bar: 30...32

Testing: 1st rack travel in: 12.50 rpm : 1280...1300 Speed 2nd rack travel in: 4.00 rpm : 1415...1425 Speed 4th rack travel in: 1500 rpm : 0.00...1.00 Speed LOW IDLE 1 Control lever position degrees: 66...74 Setting point w/out bumper spring rpm : 350 Rack travel in mm: 6.1 Testing: rpm : 100 Speed Minimum rack trave: 9.00 rpm : 350 Rack travel in mm : 6.00...6.20 CONSTANT REGULATION rpm : 360...450 Speed Aneroid/Altitude Compensator Test 1st version Setting Speed pm : 500 hPa : 225 rom Pressure Rack travel mm : 10.50...10.60 Measurement $1/\min : 500$ Speed 1st pressure hPa :-Rack travel in m: 9.30...9.40 2nd pressure hPa : 525
Rack travel in m: 12.30...12.70
3rd pressure hPa : 900
Rack travel in m: 13.50...13.60 START CUT-OUT Speed 1/min : 280 (290) FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 900

Speed rpm : 1200 Del.quantity cm3/: 134.0...138.0

Aneroid pressure h: -

1000 s: (7.0)

1000 s: (132.0...140.0) cm3 : 5.00

rpm : 500 Speed Del.quantity cm3/: 62.5...64.5 1000 s: (60.5...66.5)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 12.50 rpm : 1280...1300 Speed

STARTING FUEL DELIVERY

rpm : 100 Speed Del.quantity cm3/: 140.0...180.0 1000 s: (137.0...183.0) Rack travel in mm : 19.00...21.00

LOW IDLE

rpm : 350 Speed Rack travel in mm : 6.00...6.20

Del.quantity cm3/: 14.0...18.0 1000 s: (11.5...20.5) Spread cm3: 3.50 1000 s: (5.50)

Remarks:

: IHC #1817113C91

Only perform pump setting with original overflow valve without IH hose and restrictor 1.2 mm diameter.

In unlatched condition, do not operate greater than n = 500 1/min

Set shutoff stop 1.5...2.0 mm before shutoff.

Spread

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks : IHC 7,6 V 2 Test sheet : 25.01.91 Edition : 16.11.90 Replaces : ISO-4113 Test oil Combination no. : 0 403 446 267 Injection pump Pump designation : PES6MW100/320RS1185 : 0 413 406 170 EP type number Governor Governor design. : RQV350...1200MW46-36 : 0 420 083 230 Governer no. Customer-spec. information : NAVISTAR Customer Engine : DTA-466 1st version kW : 156.0 Rated speed : 2400 TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 2 417 413 038 Inlet press., bar: 2.80 Test nozzle holder : 1 688 901 101 assembly Opening | : 207...210 pressure, bar Orifice plate diameter mm : 0,6 Test lines : 1 680 750 008 Outside diameter x Wall thickness x Lenath mm : 6.00X2.00X600

(A) Injection pump setting values

per values

Test pressure, bar: 30...32

BEGINNING OF DELIVERY

Insp. values in parentheses Set equal delivery quant.

Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4 : 0-60-120-180-240-300 Phasing : 0.50 (0.75) Tolerance + - ° BASIC SETTING 1st speed rpm: 800 Rack travel in mm : 12.70...12.80 Del.quantity cm3/: 12.5...12.7 100 s: (12.3...12.9) Spread cm3 : 0.3100 s: (0.6) 2nd speed rpm : 350.0Rack travel in mm : 6.0...6.2 Del.quantity cm3/: 1.4...1.8 100 s: (1.1...2.0) cm3 : 0.3Spread 100 s: (0.5) (B) Setting of injection pump with governor GUIDE SLEEVE TRAVEL rpm : 1350 1st speed : 8.80...9.20 travel mm rpm : 1250 2nd speed : 7.90...8.10 travel mm rpm : 550 3rd speed : 3.10...3.70 travel mm : 350 4th speed rpm : 1.30...1.70 travel mm FULL LOAD DELIV. AT FULL LOAD STOP 1st version rpm : 800 Speed Aneroid pressure h: 900 : 125.5...127.5 Del.quantity 1000 : (123.5...129.5) cm3 : 3.50 Spread 1000 : (6.00) RATED SPEED 1st version Control lever position degrees: 100...108

: 3.75...3.85

: (3.70...3.90)

Prestroke mm

Testing: 1st rack travel in: 11.70 rpm : 1275...1295 2nd rack travel in: 4.00 Speed rpm : 1410...1420 4th rack travel in: 1500 rpm : 0.00...1.00 Speed LOW IDLE 1 Control lever position degrees: 66...74 Setting point w/out bumper spring : 350 rpm Rack travel in mm: 6.1 Testing: Speed rpm : 100 Minimum rack trave: 9.00 rpm : 350 Speed Rack travel in mm : 6.00...6.20 CONSTANT REGULATION rpm : 360...450 Speed Aneroid/Altitude Compensator Test 1st version Setting : 500 Speed rpm hPa : 280 Pressure : 10.70...10.80 Rack travel mm Measurement $1/\min : 500$ Speed 1st pressure hPa : -Rack travel in m: 9.80...9.90 2nd pressure hPa : 500 Rack travel in m: 11.90...12.30 3rd pressure hPa : 900 Rack travel in m: 12.70...12.80 START CUT-OUT 1/min: 280 (290) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 900 Speed rpm : 1200 Del.quantity cm3/ : 124.5...128.5 1000 s: (122.5...130.5)

cm3 : 5.00

1000 s: (7.0)

Speed rpm : 500 Del.quantity cm3/ : 71.5...73.5 1000 s: (69.5...75.5)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 11.70 Speed rpm : 1275...1295

STARTING FUEL DELIVERY

LOW IDLE

Speed rpm : 350
Rack travel in mm : 6.00...6.20
Del.quantity cm3/: 14.0...18.0
1000 s: (11.5...20.5)

Spread cm3 : 3.50 1000 s: (5.50)

Remarks:

: IHC #1817110C91

Only perform pump setting with original overflow valve without IH hose and restrictor 1.2 mm diameter.

In unlatched condition, do not operate greater than n = 500 1/min

Set shutoff stop 1.5...2.0 mm before shutoff.

Spread

Aneroid pressure h: -

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks : IHC 7,6 V1 Test sheet : 25.01.91 Edition Replaces : 16.11.90 : ISO-4113 Test oil : 0 403 446 268 Combination no. Injection pump Pump designation : PES6MW100/320RS1185 EP type number : 0 413 406 170 Governor Governor design. : RQV350...1200MW46-37 : 0 420 083 231 Governer no. Customer-spec. information Customer : NAVISTAR Engine : DTA-466 1st version kW : 156.0 : 2400 Rated speed TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 2 417 413 038 Inlet press., bar: 2.80 Test nozzle holder : 1 688 901 101 assembly Openina : 207...210 pressure, bar Orifice plate diameter mm : 0,6 Test lines : 1 680 750 008 Outside diameter x Wall thickness x Length mm : 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.75...3.85 : (3.70...3.90) Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - * : 0.50 (0.75)

BASIC SETTING

1st speed rpm: 800

Rack travel in mm : 12.70...12.80

Del.quantity cm3/: 12.5...12.7

100 s: (12.3...12.9)

cm3 : 0.3Spread

100 s: (0.6)

rpm : 350.02nd speed Rack travel in mm: 6.0...6.2 Del.quantity cm3/: 1.4...1.8

100 s: (1.1...2.0)

cm3 : 0.3Spread 100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 1350 1st speed

: 8.80...9.20 travel mm rpm : 1250 2nd speed

travel mm : 7.90...8.10

3rd speed

rpm : 550 : 3.10...3.70 rpm : 350 travel mm

4th speed

travel mm : 1.30...1.70

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 800 Aneroid pressure h: 900

: 125.5...127.5 Del quantity 1000 : (123.5...129.5)

: 3.50 Spread cm3

1000 : (6.00)

RATED SPEED

1st version Control lever

position degrees: 100...108

Testina:

1st rack travel in: 11.70

rpm : 1275...1295

2nd rack travel in: 4.00

Speed rpm: 1410...1420 4th rack travel in: 1500

Speed rom : 0.00...1.00

LOW IDLE 1 Control Lever

position degrees: 66...74

Setting point w/out bumper spring

rpm Rack travel in mm: 6.1

Testing:

Speed rpm : 100

Minimum rack trave: 9.00 : 350 rpm

Rack travel in mm : 6.00...6.20

CONSTANT REGULATION

rpm : 360...450 Speed

Aneroid/Altitude

Compensator Test

1st version

Setting

: 500 Speed rom hPa : 180 Pressure

Rack travel mm : 9.20...9.30

Measurement

 $1/\min : 500$ Speed

1st pressure hPa : -

Rack travel in m: 8.10...8.20

2nd pressure hPa : 435

Rack travel in m: 11.40...11.80

3rd pressure hPa : 900

Rack travel in m: 12.70...12.80

START CUT-OUT

1/min: 280 (290) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900

rpm : 1200

Del.quantity cm3/: 124.5...128.5

1000 s: (122.5...130.5) cm3 : 5.00

Spread

1000 s: (7.0)

Aneroid pressure h: -

Speed rpm : 500 Del.quantity cm3/: 45.0...47.0

1000 s: (43.0...49.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.70

rpm : 1275...1295 Speed

STARTING FUEL DELIVERY

Speed : 100 rom

Del.quantity cm3/: 140.0...180.0 1000 s: (137.0...183.0) Rack travel in mm: 19.00...21.00

LOW IDLE

rpm : 350 Speed

Rack travel in mm: 6.00...6.20 Del.quantity cm3/: 14.0...18.0 1000 s: (11.5...20.5)

cm3 : 3.50 Spread

1000 s: (5.50)

Remarks:

: IHC #1817111C91

Only perform pump setting with original overflow valve without IH hose and

restrictor 1.2 mm diameter.

In unlatched condition, do not operate greater than n = 500 1/min

Set shutoff stop 1.5...2.0 mm before

shutoff.

Note remarks

Test sheet : MB 6.1 D 1 Edition : 01.02.91

Replaces

Test oil : ISO-4113

Combination no. : 0 403 446 274

Injection pump

Pump designation : PES6MW100/720RS1131

EP type number : 0 413 406 123

Governor

Governor design. : RQ300/1300MW105-3

Governer no. : 0 420 082 050

Customer-spec. information Customer : MB-NFZ

Engine : OM 366 A

1st version kW : 121.0 : 2600 Rated speed

TEST BENCH REQUIREMENTS

Test oil

: 38...42 inlet temp. °C

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Openina

pressure, bar : 172...175

: 1 680 715 015 Test lines

Outside diameter

x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

: 3.70...3.80 Prestroke mm : (3.65...3.75) Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

Phasing : 0-60-120-180-240-300

Tolerance + - * : 0.50 (0.75)

BASIC SETTING

rpm: 1300 1st speed

Rack travel in mm : 10.90...11.00

Del.quantity cm3/: 8.8...9.0

100 s: (8.6...9.2)

cm3 : 0.3Spread

100 s: (0.6)

rpm : 300.02nd speed Rack travel in mm: 6.3...6.5 Del.quantity cm3/: 1.0...1.4 100 s: (0.7...1.6)

cm3 : 0.3Spread

100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 1400 1st speed

: 8.80...9.20 travel mm rpm : 1300 2nd speed

: 7.50...7.70 travel mm rpm : 500 3rd speed

travel mm

: 4.90...5.50

300 4th speed rpm :

: 2.10...2.50 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: 107

rpm : 1200

Rack travel in mm : 14.70...16.30

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm: 1300 Aneroid pressure h: 700

: 88.0...90.0 Del.quantity

1000 : (86.0...92.0)

: 3.50 Spread cm3 1000 : (6.00)

RATED SPEED

1st version Control Lever position degrees: 96...104 Setting point: Speed rpm Rack travel in mm: 15.5 Testing: 1st rack travel in: 9.90 rpm : 1345...1360 Speed 2nd rack travel in: 4.00 rpm : 1410...1440 Speed 4th rack travel in: 1500 rpm : 0.00...1.00 Speed LOW IDLE 1 Control lever position degrees: 72...80 Setting point w/out bumper spring rpm : 300 Speed Rack travel in mm: 6.4 Testina: rpm : 200 Speed Minimum rack trave: 8.00 rpm : 300 Speed Rack travel in mm : 6.30...6.50 Rack travel in mm : 2.00 rpm : 510...550 Speed TORQUE CONTROL Dimension a mm : 0.70 Torque control curve - 1st version rpm : 1300 1st speed Rack travel in m: 10.90...11.00 2nd speed rpm : 750 Rack travel in m: 11.60...11.70 3rd speed rpm : 1100 Rack travel in m: 11.10...11.30 Aneroid/Altitude Compensator Test 1st version Setting : 500 Speed rpm hPa : 290 Pressure : 10.20...10.30 Rack travel mm Measurement 1/min: 500 Speed 1st pressure hPa : -Rack travel in m: 9.70...9.80 2nd pressure hPa : 400

Rack travel in m: 11.10...11.40

Rack travel in m: 11.60...11.70

3rd pressure hPa : 700

START CUT-OUT 1/min: 200 (230) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 700 rpm : 750 Speed Del.quantity cm3/: 86.0...89.0 1000 s: (83.5...91.5) cm3 : 5.00 Spread 1000 s: (7.0) Aneroid pressure h: rpm : 500 Speed Del.quantity cm3/: 49.0...51.0 1000 s: (47.0...53.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 9.90 rpm : 1345...1360 Speed STARTING FUEL DELIVERY rpm : 100 Speed Del.quantity cm3/: 100.0...110.0 1000 s: (97.0...113.0) LOW IDLE Speed rpm : 300 Rack travel in mm : 6.30...6.50 Del.quantity cm3/: 10.0...14.0 1000 s: (7.5...16.5) cm3 : 3.50 Spread 1000 s: (5.50) Remarks:

Note remarks

Test sheet : CUM 8,3 H 2 Edition : 25.01.91 : 13.10.89 Replaces Test oil : ISO-4113

Combination no. : 0 403 466 113

Injection pump

Pump designation : PES6MW100/120RS1137-

EP type number : 0 413 406 157

Governor

Governor design. : RSV450...1100MW2A319

-13

: 0 420 085 114 Governer no.

Customer-spec. information : CUMMINS/US Customer

: 6 CTA Engine : 2200 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 9 410 270 183

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 017 assembly

Openina |

pressure, bar : 207...210

Orifice plate

diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

: 3.50...3.60 : (3.45...3.65) Prestroke mm

Rack travel in mm : 9.00...12.00 : 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

: 0.50 (0.75) Tolerance + - °

Time to cyl. no. : 1

BASIC SETTING

rpm: 750 1st speed

Rack travel in mm : 14.00...14.10

Del.guantity cm3/: 15.0...15.2

100 s: (14.8...15.4)

Spread cm3 : 0.3

100 s: (0.6)

rpm : 450.0 2nd speed Rack travel in mm: 6.7...6.9

Del.quantity cm3/: 1.6...2.0

100 s: (1.3...2.2)

cm3 : 0.3Spread

100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3 rpm : 800

Rack travel in mm: 0.30...1.00

Governor spring pre-tension

Click setting x : 3.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 750

: 150.5...152.5 Del.quantity 1000 : (148.5...154.5)

: 3.50 Spread cm3 1000 : (6.00)

RATED SPEED

1st version Control lever

position degrees: 42...50

Setting point:

: 800 Speed rpm

Rack travel in mm: 0.6 Testina: 1st rack travel in: 11.50 rpm : 1150...1160 Speed 2nd rack travel in: 4.00 rpm : 1200...1230 Speed 3rd rack travel in: 4.00 rpm : 1200...1230 Speed 4th rack travel in: 1370 rom : 0.30...1.70Speed LOW IDLE 1 Control Lever position degrees: 19...27 Setting point w/out bumper spring Speed rpm: 450 Rack travel in mm: 6.3 Testing: : 100 Speed rpm Minimum rack trave: 19.00 rpm : 450 Rack travel in mm : 6.20...6.40 SET IDLE AUXILIARY SPRING Rack travel in mm : 4.00 TORQUE CONTROL Dimension a mm : 1.50 Torque control curve - 1st version rpm : 750 1st speed Rack travel in m: 14.00...14.10 rpm : 1100 2nd speed Rack travel in m: 12.50...12.70 3rd speed rpm : 950 Rack travel in m: 13.20...13.60 FUEL DELIVERY CHARACTERISTICS 1st version : 1100 Speed rpm Del.quantity cm3/: 130.5...133.5 1000 s: (128.0...136.0) cm3 : 5.00 Spread 1000 s: (7.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 11.50 rpm : 1150...1160 Speed

:

Spread cm3 : 3.50 1000 s: (5.50)

Remarks:

J15

STARTING FUEL DELIVERY

Note remarks

Test sheet : MB 4,0 A 32 : 16.01.91 Edition

Replaces

Test oil : ISO-4113

Combination no. : 0 403 474 010

Injection pump

Pump designation : PES4MW100/720RS1127

EP type number : 0 413 404 103

Governor

: RSV350...750MW0A336-Governor design.

: 0 420 085 164

Governer no.

Customer-spec. information Customer : MB-NFZ

: 0M364A Engine

1st version kW : 84.0 : 1500 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Openina

pressure, bar : 172...175

Test Lines : 1 680 750 015

Outside diameter x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

: 3.70...3.80 Prestroke mm

: (3.65...3.85)

Rack travel in mm : 9.00...12.00

Firing order : 1-3-4-2

Phasina : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

rpm: 700 1st speed

Rack travel in mm : 13.80...13.90

Del.guantity cm3/: 9.5...9.7

100 s: (9.3...9.9)

cm3 : 0.3Spread

100 s: (0.6)

2nd speed rpm : 350.0 Rack travel in mm : 7.5...7.7 Del.quantity cm3/: 0.9...1.3

100 s: (0.6...1.5) cm3 : 0.3Spread

100 s: (0.5)

GUIDE SLEEVE POSITION Control-Lever position

Degree: -3

Speed rpm : 800 Rack travel in mm : 0.30...1.00

Governor spring pre-tension Click setting x : 2.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

: 95.0...97.0 Del.quantity 1000 : (93.0...99.0)

: 3.50 Spread cm3

1000 : (6.00)

RATED SPEED

1st version Control Lever

position degrees: 72...80

Setting point:

Speed rom Rack travel in mm: 0.6

Testina:

1st rack travel in: 12.80

rpm : 750...755 * Speed

2nd rack travel in: 4.00

rpm : 780...793

4th rack travel in: 950

Speed rpm : 0.30...1.40

LOW IDLE 1 Control Lever

position degrees: 60...68

Setting point w/out bumper spring

Speed rpm : 350 Rack travel in mm : 7.6 Speed rpm : 350 Rack travel in mm : 7.50...7.70

SET IDLE AUXILIARY SPRING Rack travel in mm: 2.00

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 12.80 rpm : 750...755 Speed

STARTING FUEL DELIVERY

rpm : 100

Del.quantity cm3/: 90.0...100.0 1000 s: (87.0...103.0)

LOW IDLE

Speed rpm : 350
Rack travel in mm : 7.50...7.70
Del.quantity cm3/ : 9.0...13.0
1000 s: (6.5...15.5)
Spread cm3 : 3.50

1000 s: (5.50)

Remarks:

* Read off speed set under 1. Add 30...43 min-1 to this speed. The control-rod travel under 2. must be attained with the calculated speed profile.

Observe VDT-I-420/120

Note remarks

Test sheet : PEN 6,1 P 4

Edition : 18.01.91

Replaces : -

Test oil : ISO-4113

Combination no. : 0 403 476 096

Injection pump

Pump designation : PES6MW100/320RS1132

EP type number : 0 413 406 124

Governor

Governor design. : RSV650...750MW4A311-

4

Governer no. : 0 420 085 161

Customer—spec. information Customer : PENTA

Engine : TD 61 AG

1st version kW : 93.0 Rated speed : 1500

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 457 413 010

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Openina .

pressure, bar : 172...175

Test Lines : 1 680 750 014

Outside diameter x Wall thickness

x Length mm : 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 2.90...3.00

: (2.85...3.05)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance $+ - ^{\circ} : 0.50 (0.75)$

BASIC SETTING

1st speed rpm: 700

Rack travel in mm : 11.80...11.90

Del.quantity cm3/: 9.6...9.8

100 s: (9.4...10.0)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 650.0 Rack travel in mm : 6.0...6.4 Del.quantity cm3/ : 1.7...2.1

100 s: (1.4...2.3)

Spread cm3 : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

Speed rpm: 800

Rack travel in mm : 0.30...1.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm: 700

Del.quantity : 96.0...98.0 1000 : (94.0...100.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 83...91

Setting point:

Speed rpm : 800 Rack travel in mm : 0.6

Testing:

1st rack travel in: 10.80 Speed rpm : 748...753 2nd rack travel in: 4.00

Speed rpm : 773...788

3rd rack travel in: 4.00 Speed rpm : 805...820 4th rack travel in: 950 rpm : 0.30...1.70 Speed LOW IDLE 1 Control lever position degrees: 78...86 Setting point w/out bumper spring rpm : 650 Rack travel in mm: 5.7 Testing: Speed rpm : 100 Minimum rack trave: 19.00 rpm : 650 Rack travel in mm : 5.50...5.90 BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 10.80 rpm : 748...753 Speed STARTING FUEL DELIVERY rpm : 100 Speed Del.quantity cm3/: 130.0...150.0 1000 s: (127.0...153.0) Rack travel in mm : 19.00...21.00 LOW IDLE rpm : 650 Speed Rack travel in mm : 6.00...6.40 Del.quantity cm3/: 17.0...21.0 1000 s: (14.5...23.5) cm3 : 3.50 1000 s: (5.50) Spread Remarks:

Note remarks

Test sheet : MAN 7,3 B Edition : 05.11.90

Replaces : -

Test oil : ISO-4113

Combination no. : 0 403 486 103

Injection pump

Pump designation : PES6MW100/321RS1208

EP type number : 0 413 406 199

Governor

Governor design. : RSV300...1100MW0A802

-2

Governer no. : 0 420 085 156

Customer—spec. information Customer : MAN

Engine : D0826LE 10

1st version kW : 165.0 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Opening .

pressure, bar : 172...175

Test Lines : 1 680 750 008

Outside diameter x Wall thickness

x Length mm : 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.50...3.60

: (3.45...3.65)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance $+ - \circ : 0.50 (0.75)$

BASIC SETTING

1st speed rpm: 1100

Rack travel in mm : 14.00...14.10

Del.quantity cm3/: 13.6...13.8

100 s: (13.4...14.0)

Spread cm3:0.3

100 s: (0.6)

2nd speed rpm : 300.0 Rack travel in mm : 5.0...5.2 Del.quantity cm3/: 1.1...1.5

100 s: (0.8...1.7)

Spread cm3 : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

Speed rpm: 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension Click setting x : 4.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm: 1100

Del.quantity : 136.0...138.0 1000 : (134.0...140.0)

cm3 : 3.50

1000 : (6.00)

RATED SPEED

Spread

1st version Control lever

position degrees: 111...119

Setting point:

Speed rpm: 800 Rack travel in mm: 0.6

Testing:

1st rack travel in: 13.00

rpm : 1150...1160 Speed 2nd rack travel in: 4.00 Speed rpm: 1230...1260 4th rack travel in: 1400 rpm : 0.30...1.70 Speed LOW IDLE 1 Control lever position degrees: 61...69 Setting point w/out bumper spring : 300 Speed rom Rack travel in mm: 5.1 Testing: Speed rpm : 100 Minimum rack trave: 19.00 rpm : 300 Rack travel in mm: 5.0...5.2 SET IDLE AUXILIARY SPRING Rack travel in mm : 2.00 FUEL DELIVERY CHARACTERISTICS 1st version : 600 Speed rpm Del.quantity cm3/: 137.0...140.0 1000 s: (134.5...142.5) cm3 : 5.00Spread 1000 s: (7.0) : 800 Speed CDM Del.quantity cm3/: 140.0...143.0 1000 s: (137.5...145.5) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 13.00 rpm : 1150...1160 Speed STARTING FUEL DELIVERY : 100 Speed rom Del.quantity cm3/: 130.0...150.0 1000 s: (127.0...153.0) LOW IDLE

rpm : 300

cm3 : 3.50

1000 s: (5.50)

1000 s: (8.5...17.5)

Rack travel in mm : 5.0...5.2 Del.quantity cm3/ : 11.0...15.0

Remarks:

Start-of-delivery mark is at start of delivery of cylinder 1

Speed

Spread

Note remarks

: MAN 7,3 B 1 : 16.01.91 Test sheet Edition

Replaces

Test oil : ISO-4113

Combination no. : 0 403 486 104

Injection pump

Pump designation : PES6MW100/321RS1208

EP type number : 0 413 406 199

Governor

: RSV300...1100MW0A339 Governor design.

: 0 420 085 165 Governer no.

Customer-spec. information : MAN Customer

: D0826LE 10 Engine

: 165.0 1st version kW Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Openina

pressure, bar : 172...175

Test lines : 1 680 750 008

Outside diameter x Wall thickness

x Length mm : 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values _

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

: 3.50...3.60 Prestroke mm

: (3.45...3.65)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

rpm: 1100 1st speed

Rack travel in mm : 14.00...14.10

Del.quantity cm3/: 13.5...13.7

100 s: (13.3...13.9)

cm3 : 0.3Spread

100 s: (0.6)

rpm : 300.02nd speed Rack travel in mm: 5.9...6.1 Del.quantity cm3/ : 1.1...1.5

100 s: (0.8...1.7) cm3 : 0.3Spread

100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800 Speed

Rack travel in mm : 0.30...1.00

Governor spring pre-tension Click setting x : 4.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Aneroid pressure h: 1000

: 135.0...137.0 1000 : (133.0...139.0) Del.quantity

: 3.50 Spread cm3

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 90...98

Setting point:

: 800 Speed rpm Rack travel in mm : 0.6

Testing:

1st rack travel in: 13.00 rpm : 1150...1160 Speed 2nd rack travel in: 4.00 rpm : 1230...1260 Speed 4th rack travel in: 1400 rpm : 0.30...1.70 Speed LOW IDLE 1 Control lever position degrees: 70...78 Setting point w/out bumper spring rpm : 300 Rack travel in mm: 6.0 Testing: Speed rpm : 100 Minimum rack trave: 19.00 rpm : 300 Rack travel in mm : 5.90...6.10 SET IDLE AUXILIARY SPRING Rack travel in mm: 2.00 Aneroid/Altitude Compensator Test 1st version Setting Speed : 500 rpm hPa : -Pressure Rack travel mm : 11.20...11.30 Measurement 1/min: 500 Speed 1st pressure hPa : 170 Rack travel in m: 11.50...11.60 2nd pressure hPa : 400 Rack travel in m: 13.20...13.50 3rd pressure hPa : 1000 Rack travel in m: 14.00...14.10 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1000 Speed : 600 rpm Del.quantity cm3/: 135.5...138.5 1000 s: (133.0...141.0) Spread cm3 : 5.001000 s: (7.09 Aneroid pressure h: 1000 Speed rpm : 800 Del.quantity cm3/ : 141.5...144.5 1000 s: (139.0...147.0) Aneroid pressure h: -

Del.quantity cm3/: 74.0...76.0 1000 s: (72.0...78.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 13.00 rpm : 1150...1160 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 130.0...150.0 1000 s: (127.0...153.0)

LOW IDLE

rpm : 300 Speed Rack travel in mm : 5.90...6.10

Del.quantity cm3/: 11.0...15.0 1000 s: (8.5...17.5)

cm3 : 3.50Spread 1000 s: (5.50)

Remarks:

: MAN #3-7102

Start-of-delivery mark is at start of

delivery of cylinder 1

Speed

rom

: 500

Note remarks

Test sheet : STE 6,5 F : 25.01.91 Edition

Replaces

Test oil : ISO-4113

Combination no. : 0 403 546 020

Injection pump

Pump designation : PE6MW100/720RS1157

EP type number : 0 413 506 103

Governor

Governor design. : RQ250/1200MW94-2

Governer no. : 0 420 082 047

Customer-spec. information Customer : SNF

: WD 612.66 Engine

1st version kW : 165.0 Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 457 413 010

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

: 172...175 pressure, bar

Test Lines : 1 680 750 014

Outside diameter

x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

: 3.00...3.10 : (2.95...3.15) Prestroke mm

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

rpm: 1200 1st speed

Rack travel in mm : 13.80...13.90

Del.quantity cm3/: 13.8...14.0

100 s: (13.6...14.2)

Spread cm3 : 0.3

100 s: (0.6)

rpm : 250.0 2nd speed Rack travel in mm : 5.8...6.0 Del.quantity cm3/ : 1.2...1.6 100 s: (0.9...1.8)

Spread cm3 : 0.3100 s: (0.5)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

rpm : 1320 1st speed : 9.00...9.40 travel mm

rpm : 1250 2nd speed : 6.20...6.40 travel mm

rpm : 375 3rd speed

: 3.30...3.90 travel mm

: 250 4th speed rpm

: 1.00...1.40 travel mm

GUIDE SLEEVE POSITION

Control-lever position

Degree: 107

Speed rpm : 800 Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1200

Aneroid pressure h: 900

Del.quantity : 138.0...140.0 1000 : (136.0...142.0)

: 3.50 cm3 Spread

: (6.00) 1000

RATED SPEED

1st version Aneroid pressure h: 900 Speed rpm : 700
Del.quantity cm3/: 137.0...141.0
1000 s: (135.0...143.0) Control lever position degrees: 94...102 cm3 : 5.00 Setting point: Spread Speed rpm 1000 s: (7.0) Rack travel in mm: 20.0 Aneroid pressure h: -Speed rpm: 500 Del.quantity_cm3/: 82.0...84.0 Testina: 1000 s: (80.0...86.0) 1st rack travel in: 12.80 Speed rpm : 1235...1250 2nd rack travel in: 4.00 Speed rpm: 1300...1330 4th rack travel in: 1400 BREAKAWAY Speed rom : 0.00...1.00 1st version 1mm rack travel less than LOW IDLE 1 Control lever full load rack tr: 12.80 rpm : 1235...1250 Speed position degrees: 68...76 Setting point w/out bumper spring Speed rpm : 250 STARTING FUEL DELIVERY Rack travel in mm: 5.9 Speed rpm : 100 Del.quantity cm3/: 130.0...140.0 Testing: Speed rpm : 150 Minimum rack trave: 7.50 1000 s: (127.0...143.0) rpm : 250 Rack travel in mm : 5.80...6.00 LOW IDLE Speed rpm : 250 Rack travel in mm : 5.80...6.00 CONSTANT REGULATION rpm : 260...400 Speed Del.quantity cm3/: 12.0...16.0 1000 s: (9.5...18.5) Spread cm3 : 3.50 1000 s: (5.50) Aneroid/Altitude Compensator Test 1st version Remarks: Setting Speed rpm -: 500 hPa : 400 Pressure Rack travel mm : 11.50...11.60 Measurement $1/\min : 500$ Speed 1st pressure hPa : -Rack travel in m: 11.00...11.10 2nd pressure hPa : 660 Rack travel in m: 12.90...13.20 3rd pressure hPa : 900 Rack travel in m: 13.80...13.90 START CUT-OUT 1/min: 190 (210) Speed FUEL DELIVERY CHARACTERISTICS 1st version

Note remarks

: KHD 13,4011 : 18.01.91 Test sheet Edition Replaces : 13.10.89 Test oil : ISO-4113

: 0 403 548 024 Combination no.

Injection pump

Pump designation : PE8MW100/720LS1128 : 0 413 508 103 EP type number

Governor

Governor design: : RQV300...1150MW56-4 Governor no: : 0 420 083 155

Customer-spec, information Customer : KHD

: BF 8L 513 Engine

: 243.0 1st version kW : 2300 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening.

pressure, bar : 172...175

Test lines : 1 680 740 014

Outside diameter x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.10...3.20

: (3.05...3.25)

Rack travel in mm : 9.00...12.00

Firing order : 1-8-7-2-6-5-4- 3

Phasing : 0-45-90-135-180-225-

270-315

Tolerance + - * : 0.50 (0.75)

BASIC SETTING

1st speed rpm: 1150

Rack travel in mm : 13.60...13.70

Del.guantity cm3/: 15.1...15.3

100 s: (14.9...15.5)

cm3 : 0.3Spread

100 s: (0.6)

rpm : 300.02nd speed Rack travel in mm: 6.9...7.1 Del.quantity cm3/: 1.3...1.7 100 s: (1.1...1.9)

cm3 : 0.3 Spread 100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1320

: 10.00...10.40 travel mm

rpm : 1210 2nd speed

: 8.80...9.00 travel mm

rpm : 600 3rd speed

4th speed rpm : 300 ... 4.50 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1150 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150 Aneroid pressure h: 1000

: 151.0...153.0 Del.quantity

1000 : (149.0...155.0)

cm3 : 3.50 1000 : (6.00) Spread

RATED SPEED

1st version Control lever

position degrees: 52...60

Setting point:

: 1150 Speed rpm Rack travel in mm: 16.5

Testing:

1st rack travel in: 12.60

rpm : 1190...1200

2nd rack travel in: 4.00

rpm : 1290...1320 Speed

4th rack travel in: 1350

rpm : 0.00...1.00Speed

LOW IDLE 1 Control lever

position degrees: 19...27 Setting point w/out bumper spring

rpm Rack travel in mm: 7.0

Testina:

: 100 Speed rom Minimum rack trave: 8.20 rpm : 300 Speed

Rack travel in mm : 6.90...7.10

Rack travel in mm : 2.00

: 430...490 Speed riom

CONSTANT REGULATION

rpm : 310...420 Speed

Aneroid/Altitude Compensator Test

1st version Setting

: 500 Speed rpm hPa : 710 Pressure

: 13.00...13.10 Rack travel mm

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 11.80...11.90

2nd pressure hPa : 530

Rack travel in m: 12.20...12.50

3rd pressure hPa : 1000

Rack travel in m: 13.60...13.70

START CUT-OUT

1/min: 220 (250) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

rpm : 450 Speed

Del.quantity cm3/: 108.0...110.0 1000 s: (106.0...112.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.60

rpm : 1190...1200 Speed

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 140.0...150.0 1000 s: (137.0...153.0)

LOW IDLE

rpm : 300 Speed

Rack travel in mm : 6.90...7.10 Del.quantity cm3/: 13.0...17.0 1000 s: (11.0...19.0)

cm3 : 3.50Spread

1000 s: (5.50)

Remarks:

Check electrically unlatched starting

fuel delivery (EES) with 24 volt.

Note remarks

: PER 17,4 a : 16.01.91 Test sheet Edition Replaces : 29.5.90 Test oil : ISO-4113

Combination no. : 0 405 638 201

Injection pump

Pump designation : PE8PM120A120RS7119

: 0 415 628 201 EP type number

Governor

Governor design. : RQ350/1150PA791 : 0 421 801 340 Governer no.

Customer-spec. information Customer : PERKINS

Engine : MCY 80

1st version kW : 410.0 : 2300 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 1 688 901 019

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter x Wall thickness

: 6.00x1.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.00...5.10 Prestroke mm : (4.95...5.15)

Rack travel in mm : 9.00...12.00

1-3-6-5-4-8-7-2 Firing order

Phasing : 0-45-90-135-180-225-

270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 13.60...13.70

Del.quantity cm3/: 25.7...25.9

100 s: (25.4...26.2)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 350.0 2nd speed Rack travel in mm: 4.9...5.1 Del.quantity cm3/: 1.7...2.3

100 s: (1.4...2.6)

cm3 : 0.8 Spread 100 s: (1.2)

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1400 Speed

Rack travel in mm : 6.00...9.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150 Aneroid pressure h: 1200

Del.quantity : 257.0...259.0 1000 : (254.0...262.0)

: 5.00 Spread cm3

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed : 1400 rpm Rack travel in mm : 7.5

Testing:

1st rack travel in: 12.60 rpm : 1195...1210 Speed 2nd rack travel in: 4.00 Speed rpm : 1285...1315 4th rack travel in: 1400 Speed rpm : 0.00...1.00LOW IDLE 1 Setting point w/out bumper spring Speed rpm: 350 Rack travel in mm: 5.0 Testing: rpm : 250 Speed Minimum rack trave: 6.40 rpm : 350 Speed Rack travel in mm: 4.90...5.10 Rack travel in mm: 2.00 Speed rpm: 390...430 Aneroid/Altitude Compensator Test 1st version Setting Speed : 500 rom hPa : 1200 Pressure : 13.60...13.70 Rack travel mm Measurement 1/min : 500Speed

1st pressure hPa : -Rack travel in m: 11.00...11.20 2nd pressure hPa : 890 Rack travel in m: 12.90...13.00

3rd pressure hPa : 590

Rack travel in m: 11.30...11.50

START CUT-OUT

 $1/\min : 300(0)$ Speed

FUEL DFLIVERY CHARACTERISTICS

1st version Aneroid pressure h: 1200 Speed rpm : 700

Del.quantity cm3/: 259.0...265.0 1000 s: (256.0...268.0)

Aneroid pressure h: -

Speed rpm : 700 Del.quantity cm3/: 192.0...196.0 1000 s: (190.0...198.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 12.60 rpm : 1195...1210 Speed

STARTING FUEL DELIVERY

rpm : 100 Speed Del.quantity cm3/: 195.0...215.0 1000 s: (192.0...218.0) Rack travel in mm : 19.50...21.00

LOW IDLE

Speed rpm : 350 Rack travel in mm : 4.90...5.10 Del.quantity cm3/: 17.0...23.0 1000 s: (14.0...26.0)

cm3 : 8.00 1000 s: (12.00) Spread

Remarks:

Delivery-valve spring pre-tension 3.2...3.4 mm. Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring preload on new delivery-valve holders to 2.9...3.1 mm.

APPLICATION

Special-purpose vehicle

Note remarks

: CUM 8,3 b13 Test sheet Edition : 16.01.91

Replaces

: ISO-4113 Test oil

Combination no. : 9 400 083 452CE

Injection pump

Pump designation: PES6A100D320/3RS2691

: 9 410 230 028 EP type number

Governor

: RQV350...1250AB1225R Governor design.

Governer no. : 9 420 080 224

: 3353985-VERSA024 Cust. part no.

Customer-spec. information : CUMMINS Customer

: 6 CT 8.3 L Engine

: 125.0 1st version kW : 2500 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ___

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.80...2.90 Prestroke mm : (2.75...2.95)

Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance $+ - ^{\circ} : 0.50 (0.75)$

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...12.00

& maximum rack tra: 21.00

Difference ° CS : 3.00...4.00

BASIC SETTING

1st speed rpm: 1150

Rack travel in mm : 10.70...10.80

Del.quantity cm3/: 9.3...9.5

100 s: (9.1...9.7)

cm3 : 0.3Spread

100 s: (0.6)

rpm : 350.0 2nd speed Rack travel in mm : 5.4...5.6

Del.quantity cm3/: 1.4...1.8 100 s: (1.1...2.0)

cm3 : 0.3Spread

100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm: 1265

: 8.50...8.60 travel mm

rpm : 900 2nd speed

: 5.60...6.00 travel mm

rpm : 500 3rd speed

: 3.80...4.20 travel mm

rpm : 350 4th speed

travel mm : 1.60...2.50

GUIDE SLEEVE POSITION

Control-lever position Degree: -1

rpm : 1300

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1150 Speed

93.5...95.5 1000 : (91.5...97.5) Del.quantity

cm3 : 3.50 Spread 1000 : (6.00)

RATED SPEED

1st version Control Lever

position degrees: 110...118

Testing:

1st rack travel in: 9.70

rpm : 1190...1200

2nd rack travel in: 4.00

Speed rpm : 1295...1325

4th rack travel in: 1450

rpm : 0.00...1.00 Speed

LOW IDLE 1 Control Lever

position degrees: 67...75

Testing:

: 100 Speed rpm Minimum rack trave: 10.00 rpm : 350

Rack travel in mm : 5.40...5.60

CONSTANT REGULATION

rpm : 390...460 Speed

TORQUE CONTROL

Dimension a mm : 0.70

Torque control curve - 1st version

1st speed rpm : 1150

Rack travel in m: 10.70...10.80

2nd speed rpm : 500

Rack travel in m: 11.40...11.50 3rd speed rpm : 750 Rack travel in m: 11.10...11.30

START CUT-OUT

Speed 1/min: 290 (310)

FUEL DELIVERY CHARACTERISTICS

1st version

rpm : 500 Speed

Del.quantity cm3/: 91.0...93.0

1000 s: (89.0...95.0)

rpm : 750 Speed

Del.quantity cm3/: 96.0...99.0

1000 s: (93.5...101.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.70

rpm : 1190...1200 Speed

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 168.0...182.0 1000 s: (165.0...185.0)

Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 350

Rack travel in mm : 5.40...5.60 Del.quantity cm3/ : 14.0...18.0

1000 s: (11.5...20.5)

cm3 : 3.50 Spread

1000 s: (5.50)

Remarks:

Start-of-delivery mark 11° cam angle

•

after start of delivery cyl. 1

Note remarks

: CUM 8,3 b14 Test sheet : 16.01.91 Edition

Replaces

: ISO-4113 Test oil

Combination no. : 9 400 083 458

Injection pump

: PES6A100D320/3RS2691 Pump designation

: 9 410 230 028 EP type number

Governor

Governor design. : RQV350...1100AB1218-

: 9 420 080 302 Governer no.

Customer-spec. information Customer : CUMMINS

: 6 CT Engine |

: 156.6 1st version kW Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

: 172...175 pressure, bar

Test Lines : 1 680 750 014

Outside diameter x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.80...2.90 Prestroke mm : (2.75...2.95)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

: 0-60-120-180-240-300 Phasing

Tolerance $+ - ^{\circ} : 0.50 (0.75)$

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...12.00

& maximum rack tra: 21.00 Difference ° CS : 3.00...4.00

BASIC SETTING

rpm: 1100 1st speed

Rack travel in mm : 12.60...12.70

Del.quantity cm3/: 11.7...11.9

100 s: (11.5...12.1)

cm3 : 0.3Spread

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 5.9...6.1 Del.quantity cm3/ : 1.3...1.7 100 s: (1.0...1.9)

cm3 : 0.3Spread 100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 1150 1st speed

travel mm : 7.00...7.10

2nd speed : 350 rpm

: 1.40...1.80 travel mm

3rd speed : 650 rpm

travel mm : 4.30...4.70

: 1400 4th speed rpm

travel mm : 8.80...9.20

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1325

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version 1st pressure hPa : -Rack travel in m: 11.90...12.00 Speed rpm : 1100 2nd pressure hPa : 600 Rack travel in m: 13.20...13.30 3rd pressure hPa : 500 Rack travel in m: 12.20...12.40 Aneroid pressure h: 800 Del.quantity : 117.0...119.0 1000 : (115.0...121.0) : 3.50 Spread cm3 1000 : (6.00) START CUT-OUT RATED SPEED 1/min : 290 (310) Speed 1st version FUEL DELIVERY CHARACTERISTICS Control lever position degrees: 107...115 Testing: 1st version 1st rack travel in: 11.60 Aneroid pressure h: 800 rpm : 1140...1150 rpm : 700 Speed Speed 2nd rack travel in: 4.00 Del.quantity cm3/: 131.5...134.5 1000 s: (129.0...137.0) Speed rpm : 1330...1360 4th rack travel in: 1450 Aneroid pressure h: 800 rom: : 0.00...1.00 : 800 Speed Speed rpm Del.quantity cm3/: 129.0...132.0 1000 s: (126.5...134.5) LOW IDLE 1 Control lever Aneroid pressure h: position degrees: 67...75 Speed rpm : 500 Del.quantity cm3/: 93.5...95.5 Testing: 1000 s: (91.5...97.5) Speed rpm : 100 Minimum rack trave: 9.00 Speed rpm : 350 Rack travel in mm : 5.90...6.10 **BREAKAWAY** 1st version CONSTANT REGULATION 1mm rack travel less than rpm : 430...580 Speed full load rack tr: 11.60 rpm : 1140...1150 TORQUE CONTROL Speed Dimension a mm : 1.00 Torque control curve - 1st version STARTING FUEL DELIVERY 1st speed rpm : 1100
Rack travel in m: 12.60...12.70
2nd speed rpm : 700
Rack travel in m: 13.60...13.70 Speed rpm : 100 Del.quantity cm3/: 168.0...182.0 1000 s: (-) 3rd speed mom : 800 Rack travel in mm : 19.00...21.00 Rack travel in m: 13.30...13.50 4th speed rpm : 950 Rack travel in m: 12.80...13.10 LOW IDLE rpm : 350 Aneroid/Altitude Speed Rack travel in mm : 5.90...6.10 Del.quantity cm3/ : 13.0...17.0 1000 s: (10.5...19.5) Compensator Test cm3 : 3.50 1000 s: (5.50) 1st version Spread Setting Speed : 500 man hPa : 800 Remarks: : C.D.C # 3354617 Rack travel mm : 13.60...13.70 Start-of-delivery mark at 10° cam rotation angle after start of delivery, Measurement cylinder 1 $1/\min : 500$ Speed

Note remarks

Test sheet : MB 6,0 k : 16.01.91 : 3.7.90 Edition Replaces

: ISO-4113 Test oil

Combination no. : 9 400 085 316

Injection pump

Pump designation : PES6A95D410RS2795 : 9 400 084 020 EP type number

Governor

Governor design. : RQV300...1400AB1065-

181

: 9 420 080 278 Governer no.

Customer-spec. information

Customer : MERCEDES-BENZ

: OM 366 Engine

: 100.0 1st version kW : 2800 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening |

: 172...175 pressure, bar

Test Lines : 1 680 750 015

Outside diameter

x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 3.20...3.30 Prestroke mm

: (3.15...3.35)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasina

Tolerance + - * : 0.50 (0.75)

BASIC SETTING

1st speed rpm: 1400

Rack travel in mm : 9.90...10.00

Del.quantity cm3/: 6.8...7.0

100 s: (6.6...7.2)

cm3 : 0.3Spread

100 s: (0.3)

rpm : 300.0 2nd speed Rack travel in mm: 7.8...8.0

Del.quantity cm3/: 0.8...1.4 100 s: (0.6...1.6)

cm3 : 0.3Spread

100 s: (0.3)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 1475 1st speed : 8.20...8.30 travel mm

: 300 2nd speed rpm 1.10...1.60

travel mm 3rd speed : 625 rpm

: 4.00...4.40 travel mm

: 1200 4th speed rpm

: 6.30...6.70 travel mm

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

rpm : 1525 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1400 Speed

Del.quantity : 68.5...70.5

1000 : (66.5...72.5)

: 3.50 Spread cm3

1000 : (3.50)

RATED SPEED

1st version Control lever position degrees: 106...114 Testing: 1st rack travel in: 8.90 Speed rpm : 1460...1470 2nd rack travel in: 4.00 rpm : 1555...1585 Speed 4th rack travel in: 1680 Speed rpm : 0.00...1.00LOW IDLE 1 Control lever position degrees: 70...78 Testing: rpm : 100 Speed Minimum rack trave: 11.00 Speed rpm : 300 Rack travel in mm : 7.80...8.00 CONSTANT REGULATION rpm : 375...525 Speed START CUT-OUT Speed 1/min: 220 (240) FUEL DELIVERY CHARACTERISTICS 1st version Speed rpm : 600 Del.quantity cm3/: 50.0...53.0 1000 s: (47.5...55.5) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 8.90 rpm : 1460...1470 Speed STARTING FUEL DELIVERY rpm : 100 Speed Del.quantity cm3/: 78.0...90.0 1000 s: (75.0...93.0) Rack travel in mm : 14.00...14.20 Remarks: :

Note remarks

Test sheet : FOR 7,8 L Edition : 16.01.91 : 24.10.90 Replaces Test oil : ISO-4113

: 9 400 085 324 Combination no.

Injection pump

Pump designation : PES6A95D410RS2801 EP type number : 9 400 084 023

Governor

: RQV350...1300AB1255L Governor design.

: 9 420 080 294 Governer no.

Customer-spec. information Customer : FNH

: 7.8 L - TC Engine

: 158.0 1st version kW : 2600 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 457 413 010

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Openina

: 172...175 pressure, bar

Test lines : 1 680 750 008

Outside diameter x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 3.15...3.25 Prestroke mm : (3.10...3.30)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack tray. m: 9.00...12.00

& maximum rack tra: 21.00

Difference * CS : 2.00...3.00

BASIC SETTING

1st speed rpm: 1300

Rack travel in mm : 13.00...13.10

Del.quantity cm3/: 10.0...10.2

100 s: (9.8...10.5)

Spread cm3 : 0.3

100 s: (0.6)

rpm : 350.02nd speed Rack travel in mm: 6.5...6.7 Del.quantity cm3/: 1.1...1.7

100 s: (0.9...1.8)

cm3 : 0.3Spread

100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed : 1450 rpm

: 8.50...8.60 travel mm : 350 2nd speed man

travel mm : 1.10...1.80 3rd speed 500 rpm

2.70...3.10 travel mm

700 4th speed rpm

: 3.50...3.90 travel mm

: 1000 5th speed rpm

: 4.90...5.30 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1 rpm : 1390

Speed Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

K09

2nd pressure hPa : 410 1st version rpm : 1300 Rack travel in m: 12.20...12.40 Speed Aneroid pressure h: 1000 3rd pressure hPa : 610 : 100.5...102.5 Del.quantity Rack travel in m: 13.00...13.10 1000 : (98.0...105.0) cm3 : 3.50 START CUT-OUT Spread 1000 : (6.00) 1/min : 290 (310) Speed RATED SPEED FUEL DELIVERY CHARACTERISTICS 1st version Control lever position degrees: 111...119 1st version Aneroid pressure h: 1000 Speed rpm : 850 Del.quantity cm3/: 101.5...104.5 Testing: 1st rack travel in: 12.00 1000 s: (99.0...107.0) rpm : 1340...1350 2nd rack travel in: 4.00 : 1050 rpm Speed rpm : 1475...1505 4th rack travel in: 1600 Del.quantity cm3/: 101.5...104.5 1000 s: (99.0...107.0) rpm : 0.00...1.00 Aneroid pressure h: -Speed Speed rpm : 500 Del.quantity cm3/: 75.5...77.5 LOW IDLE 1 1000 s: (73.0...80.0) Control Lever position degrees: 66...74 Testing: **BREAKAWAY** : 100 Speed rpm Minimum rack trave: 9.00 1st version : 350 rpm 1mm rack travel less than Rack travel in mm : 6.50...6.70 full load rack tr: 12.00 rpm : 1340...1350 CONSTANT REGULATION Speed rpm : 370...440 Speed STARTING FUEL DELIVERY TORQUE CONTROL Dimension a mm : 0.40 Torque control curve - 1st version Speed rpm Del.quantity cm3/: 155.0...175.0 1000 s: (152.0...178.0) 1st speed rpm : 1300 Rack travel in m: 13.00...13.10 rpm : 850 Rack travel in mm : 19.00...21.00 2nd speed Rack travel in m: 13.40...13.50 4th speed rpm : 1050 LOW IDLE Rack travel in m: 13.20...13.30 Speed rpm : 350 Rack travel in mm : 6.50...6.70 Aneroid/Altitude Del.quantity cm3/: 11.0...17.0 1000 s: (9.5...18.5) Compensator Test cm3 : 3.50Spread 1000 s: (5.50) 1st version Setting Speed : 500 Remarks: rpm hPa : 1000 Pressure Rack travel mm : 13.40...13.50 Set shutoff stop 1.5...2.0 mm before shutoff. Measurement $1/\min : 500$ Speed 1st pressure hPa : -

Rack travel in m: 11.80...12.10

Note remarks

: FOR 7,8 m : 16.01.91 Test sheet Edition Replaces : 24.10.90 Test oil : ISO-4113

Combination no. : 9 400 085 325

Injection pump

: PES6A95D410RS2800 Pump designation : 9 400 084 024

EP type number Governor

: RQV375...1300AB1202-Governor design.

: 9 420 080 295 Governer no.

Customer-spec. information Customer

: 7.8 L - NA Enaine

: 125.0 1st version kW : 2600 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 457 413 010

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Openina

: 172...175 pressure, bar

Test lines : 1 680 750 008

Outside diameter x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 3.15...3.25 Prestroke mm

: (3.10...3.30)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - * : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...12.00

& maximum rack tra: 21.00 Difference ° CS : 2.00...3.00

BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 12.30...12.40

Del.quantity cm3/: 8.9...9.1

100 s: (8.7...9.3)

cm3 : 0.3Spread

100 s: (0.6)

2nd speed rpm : 375.0 Rack travel in mm : 6.7...6.9

Del.quantity cm3/: 0.8...1.4

100 s: (0.6...1.5)

cm3 : 0.3Spread 100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 1345 1st speed

: 8.50...8.60 travel mm

rpm : 350 2nd speed

: 1.30...1.60 travel mm

rpm : 700 3rd speed

: 4.10...4.50 travel mm

: 1100 4th speed rom

: 6.30...6.60 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1345 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1300 Speed : 89.0...91.0 Del.quantity 1000 : (87.0...93.0) : 3.50 Spread cm3 1000 : (6.00) RATED SPEED 1st version Control Lever position degrees: 114...122 Testing: 1st rack travel in: 11.30 Speed rpm : 1340...1350 2nd rack travel in: 4.00 rpm : 1450...1480 Speed 4th rack travel in: 1600 rpm : 0.00...1.00 Speed LOW IDLE 1 Control lever position degrees: 68...76 Testina: Speed rpm : 100 Minimum rack trave: 9.50 Speed rpm: 375 Rack travel in mm : 6.70...6.90 CONSTANT REGULATION rpm : 465...535 Speed START CUT-OUT 1/min: 290 (310) Speed FUEL DELIVERY CHARACTERISTICS 1st version Speed rpm : 800 Del.quantity cm3/: 82.0...85.0 1000 s: (79.5...87.5) BREAKAWAY 1st version 1mm rack travel less than

full load rack tr: 11.30

rpm : 1340...1350

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/: 115.0...129.0 1000 s: (-)

Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 375 Rack travel in mm : 6.70...6.90 Del.quantity cm3/: 8.0...14.0 1000 s: (6.5...15.5)

cm3 : 3.50

Spread 1000 s: (5.50)

Remarks:

Set shutoff stop 1.5...2.0 mm before

shutoff.

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks

Test sheet : FOR 6,6 p : 16.01.91 Edition Replaces

Test oil : ISO-4113

Combination no. : 9 400 085 326

Injection pump

Pump designation : PES6A95D410RS2802 EP type number : 9 400 084 025

Governor

Governor design. : RQV350...1300AB1220-

: 9 420 080 280 Governer no.

Customer-spec. information Customer : FORD (FNH)

Engine : 6.6 L - TC

1st version kW : 139.0 Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 457 413 010

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

Test lines : 1 680 750 008

Outside diameter x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY Test pressure, bar: 25...27

: 3.15...3.25 Prestroke mm : (3.10...3.30) Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance $+ - \circ : 0.50 (0.75)$

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...12.00

& maximum rack tra: 21.00

Difference ° CS : 2.00...3.00

BASIC SETTING

rpm: 1300 1st speed

Rack travel in mm : 13.20...13.30

Del.quantity cm3/: 10.1...10.3

100 s: (9.9...10.6)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 350.0 Rack travel in mm: 6.0...6.2

Del.quantity cm3/: 1.5...2.1 100 s: (1.3...2.2)

cm3 : 0.3Spread 100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 14501st speed

: 8.50...8.60 travel mm

2nd speed rpm : 350

: 1.10...1.80 travel mm 3rd speed rpm : 500

: 2.70...3.10 travel mm

rpm : 700 4th speed

: 3.50...3.90 travel mm

rpm : 10005th speed

travel mm : 4.90...5.30

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1540 Rack travel in mm : 6.70...9.30

FULL LOAD DELIV. AT FULL LOAD STOP

1st version rpm : 1300 Speed Aneroid pressure h: 900 : 101.5...103.5 Del.quantity 1000 : (99.0...106.0) : 3.50 cm3 Spread 1000 : (6.00) RATED SPEED 1st version Control lever position degrees: 111...119 Testing: 1st rack travel in: 12.20 rpm : 1340...1350 Speed 2nd rack travel in: 4.00 rpm : 1490...1520 Speed 4th rack travel in: 1630 Speed rpm : 0.00...1.00 LOW IDLE 1 Control lever position degrees: 65...73 Testina: Speed rpm : 100 Minimum rack trave: 9.00 : 350 rpm Rack travel in mm : 6.00...6.20 CONSTANT REGULATION Speed rpm : 370...440 Aneroid/Altitude Compensator Test 1st version Setting : 500 Speed rom hPa : 900 Pressure Rack travel mm : 13.20...13.30 Measurement 1/min: 500 Speed 1st pressure hPa : -Rack travel in m: 10.10...10.40 2nd pressure hPa : 380 Rack travel in m: 11.00...11.30

3rd pressure hPa : 530 Rack travel in m: 12.80...12.90

1/min: 290 (310)

FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 900 rpm : 800 Speed Del.quantity cm3/: 99.5...103.5 1000 s: (97.5...105.5) Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/: 65.5...67.5 1000 s: (63.0...70.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 12.20 Speed rpm : 1340...1350 STARTING FUEL DELIVERY rpm : 100 Speed Del.quantity cm3/: 155.0...175.0 1000 s: (152.0...178.0) Rack travel in mm: 19.00...21.00 LOW IDLE Speed rpm : 350 Rack travel in mm : 6.00...6.20 Del.guantity cm3/: 15.0...21.0 1000 s: (13.5...22.5) Spread cm3 : 3.501000 s: (5.50) Remarks: Set shutoff stop 1.5...2.0 mm before shutoff.

Speed

START CUT-OUT

Note remarks

Test sheet : MWM 3,9 e **Edition** : 16.01.91

Replaces

Test oil : ISO-4113

Combination no. : 9 400 085 328

Injection pump

Pump designation : PES4A90D320RS2798 EP type number : 9 400 084 021

Governor

Governor design. : RS350/1400A2B2255R

: 9 420 083 247 Governer no.

Customer-spec. information Customer : MWM

Engine : TD 229 EC 4

: 90.8 1st version kW : 2800 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 046

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

: 172...175 pressure, bar

Test Lines : 1 680 750 014

Outside diameter x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.65...2.75 Prestroke mm : (2.60...2.80)

Rack travel in mm : 9.00...12.00

: 1-3-4-2 Firing order

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...12.00 & maximum rack tra: 21.00

Difference ° CS : 3.00...4.00

BASIC SETTING

1st speed rpm: 1400

Rack travel in mm : 12.80...12.90

Del.quantity cm3/: 9.8...9.9

100 s: (9.6...10.1)

cm3 : 0.3Spread

100 s: (0.5)

rpm : 350.02nd speed

Rack travel in mm: 4.9...5.1 Del.quantity cm3/: 0.6...1.2

100 s: (0.4...1.4)

cm3 : 0.2Spread 100 s: (0.4)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

Speed rpm : 800 Rack travel in mm : 0.30...1.00

Governor spring pre-tension Click setting x : 6.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1400 Speed Aneroid pressure h: 800

: 98.5...99.5 Del.quantity

1000 : (96.5...101.5)

: 3.00 Spread cm3 1000 : (5.00)

RATED SPEED

1st version

Control Lever position degrees: 62...70 Testing: 1st rack travel in: 11.80 rpm : 1440...1450 Speed 2nd rack travel in: 4.00 rpm : 1545...1575 Speed 4th rack travel in: 1700 rpm : 0.30...1.70 Speed LOW IDLE 1 Control Lever position degrees: 15...23 Setting point w/out bumper spring rpm : 350 Rack travel in mm: 5.0 Testing: : 250 Speed rpm Minimum rack trave: 6.40 rpm : 350 Speed Rack travel in mm : 4.90...5.10 Rack travel in mm : 3.00 Speed rpm : 400...460 Speed rpm : 800 Maximum rack trave: 2.00 TORQUE CONTROL Torque control curve - 1st version rpm : 1400 1st speed Rack travel in m: 12.80...12.90 2nd speed rpm : 800 Rack travel in m: 12.80...13.00 4th speed rpm : 550 Rack travel in m: 12.80...13.00 rpm : 400 5th speed Rack travel in m: 14.80...15.20 Aneroid/Altitude Compensator Test 1st version Settina : 500 Speed rpm hPa : 800 Pressure Rack travel mm : 12.80...13.00 Measurement 1/min: 500 Speed 1st pressure hPa : -Rack travel in m: 9.80...10.20 2nd pressure hPa : 180 Rack travel in m: 10.80...10.90 3rd pressure hPa : 350 Rack travel in m: 12.10...12.40 FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 800
Speed rpm: 800
Del.quantity cm3/: 93.5...96.5
1000 s: (91.0...99.0)
Aneroid pressure h: Speed rpm: 500
Del.quantity cm3/: 45.5...47.5
1000 s: (43.5...49.5)

BREAKAWAY

4

1st version 1mm rack travel less than

full load rack tr: 11.80 Speed rpm : 1440...1450

STARTING FUEL DELIVERY

Speed rpm : 100 Rack travel in mm : 19.00...21.00

Remarks:

OLL VELIVERY

K16

Note remarks

Test sheet : FOR 6,6 q Edition : 16.01.91

Replaces

: ISO-4113 Test oil

Combination no. : 9 400 085 331

Injection pump

Pump designation : PES6A95D41ORS2800 EP type number : 9 400 084 024

Governor

Governor design. : RQV375...1400AB1257L

Governer no. : 9 420 080 299

Customer—spec. information Customer : FNH

Engine : 6.6 L - NA

: 108.9 1st version kW Rated speed : 2800

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 457 413 010

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

Test lines : 1 680 750 008

Outside diameter x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 3.15...3.25 Prestroke mm : (3.10...3.30) Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

: 0-60-120-180-240-300 Phasing

Tolerance $+ - ^{\circ} : 0.50 (0.75)$

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...12.00 & maximum rack tra: 21.00 Difference ° CS : 2.00...3.00

BASIC SETTING

rpm: 1400 1st speed

Rack travel in mm : 10.40...10.50

Del.quantity cm3/: 7.3...7.5

100 s: (7.1...7.7)

cm3 : 0.3Spread

100 s: (0.6)

rpm : 375.0 2nd speed Rack travel in mm: 6.3...6.5

Del.quantity cm3/: 0.4...1.0 100 s: (0.3...1.2)

cm3 : 0.3Spread 100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1420

: 8.50...8.60 travel mm

rpm : 350 2nd speed

: 1.30...1.60 travel mm

rpm : 700 3rd speed

: 4.20...4.60 travel mm

rpm : 1100 4th speed

: 6.10...6.40 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1400 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1400 Speed

Del.quantity : 73.0...75.0 1000 : (71.0...77.0) Spread cm3 : 3.50 1000 : (6.00)RATED SPEED 1st version Control lever position degrees: 113...121 Testina: 1st rack travel in: 9.40 rpm : 1450...1460 Speed 2nd rack travel in: 4.00 rpm : 1535...1565 Speed 4th rack travel in: 1700 rpm : 0.00...1.00Speed LOW IDLE 1 Control lever position degrees: 67...75 Testing: rpm : 100 Speed Minimum rack trave: 9.50 rpm Rack travel in mm : 6.30...6.50 CONSTANT REGULATION Speed rom : 460...530TORQUE CONTROL Dimension a mm : 0.50 Torque control curve - 1st version rpm : 1400 1st speed Rack travel in m: 10.40...10.50 2nd speed rpm : 500 Rack travel in m: 10.90...11.00 rpm : 900 3rd speed Rack travel in m: 10.90...11.00 rpm : 1100 4th speed Rack travel in m: 10.70...10.80 START CUT-OUT 1/min: 290 (310) Speed FUEL DELIVERY CHARACTERISTICS 1st version

Speed : 500 rom Del.quantity cm3/: 57.5...60.5 1000 s: (55.0...63.0) rpm : 900 Speed Del.quantity cm3/: 70.5...73.5 1000 s: (68.0...76.0) rpm : 1100 Speed

Del.quantity cm3/: 72.5...75.5 1000 s: (70.0...78.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 9.40

Speed rpm : 1450...1460

STARTING FUEL DELIVERY

rpm : 100 Speed Del.quantity cm3/: 115.0...129.0 1000 s: (112.0...132.0) Rack travel in mm : 19.00...21.00

LOW IDLE

rpm : 375 Speed Rack travel in mm : 6.30...6.50 Del.quantity cm3/: 4.5...10.5 1000 s: (3.0...12.0) Spread cm3 : 3.50 1000 s: (5.50)

Remarks:

Set shutoff stop 1.5...2.0 mm before shutoff.

Note remarks

Test sheet Edition

: MWM 5,9 g 1 : 16.01.91

Replaces

Test oil

: ISO-4113

Combination no.

: 9 400 085 332

Injection pump

Pump designation

: PES6A90D320RS2727

EP type number

: 9 400 084 007

Governor

Governor design.

: RSV350...1200A2B2097

-3R

Governer no.

: 9 420 083 248

Customer-spec. information Customer

: MWM

Engine

: D 229 EC 6

1st version kW

: 90.8

Rated speed

: 2400

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C

: 38...42

Overflow valve

: 1 417 413 046

Inlet press., bar: 1.50

Test nozzle holder

assembly

: 0 681 343 009

Openina |

pressure, bar

: 172...175

Test Lines

: 1 680 750 014

Outside diameter

x Wall thickness

x Length mm

: 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm

: 2.70...2.80

: (2.65...2.85)

Rack travel in mm : 9.00...12.00

Firing order

: 1-5-3-6-2-4

Phasina

: 0-60-120-180-240-300

Tolerance + - °

: 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...12.00

& maximum rack tra: 21.00

Difference ° CS : 3.00...4.00

BASIC SETTING

1st speed

rpm: 1200

Rack travel in mm : 9.10...9.20

Del.quantity cm3/ : 5.9...6.0

100 s: (5.7...6.2)

Spread

cm3 : 0.3

100 s: (0.5)

2nd speed rpm : 350.D Rack travel in mm : 5.4...5.6

Del.quantity cm3/: 0.8...1.2 100 s: (0.6...1.4)

Spread

cm3 : 0.2100 s: (0.4)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 3.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

: 1200 rpm

Del.quantity

59.5...60.5

1000 : (57.5...62.5)

Spread

: 3.00 cm3

1000 : (5.00)

RATED SPEED

1st version

Control Lever position degrees: 90...98 Testina: 1st rack travel in: 8.10 rpm : 1240...1250 2nd rack travel in: 4.00 rpm : 1265...1295 Speed 4th rack travel in: 1450 Speed rpm: 0.30...1.70 LOW IDLE 1 Control lever position degrees: 64...72 Setting point w/out bumper spring rpm : 350 Rack travel in mm: 5.0 Testing: rpm : 100 Speed Minimum rack trave: 19.00 Speed rpm : 350
Rack travel in mm : 5.40...5.60
Rack travel in mm : 2.00 rpm : 530...590 Speed TORQUE CONTROL Torque control curve - 1st version rpm : 1200 1st speed Rack travel in m: 9.10...9.20 2nd speed rpm : 500 Rack travel in m: 10.10...10.20 3rd speed rpm : 800 Rack travel in m: 9.70...9.90 4th speed rpm : 1000 Rack travel in m: 9.30...9.60 FUEL DELIVERY CHARACTERISTICS 1st version : 500 Speed rpm Del.quantity cm3/: 55.5...57.5 1000 s: (53.0...60.0) 008: man Speed Del.quantity cm3/: 62.0...64.0 1000 s: (59.5...66.5) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 8.10 Speed rpm : 1240...1250

Speed rpm : 100 Rack travel in mm : 19.00...21.00

Speed rpm : 350
Rack travel in mm : 5.40...5.60
Del.quantity cm3/: 8.0...12.0
1000 s: (6.0...14.0)
Spread cm3 : 2.50
1000 s: (4.50)

Remarks:

APPLICATION

Tractor (tractor engines)

K20

STARTING FUEL DELIVERY

Note remarks

Test sheet : MB 4,0 i Edition : 16.01.91

Replaces

Test oil : ISO-4113

Combination no. : 9 400 085 333

Injection pump

Pump designation : PES4A95D410RS2805 EP type number : 9 400 084 026

Governor

Governor design. : RQV300...1400AB1065-

21L

Governer no. : 9 420 080 303

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : OM 364

1st version kW : 66.0 Rated speed : 2800

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Opening

pressure, bar : 172...175

Test Lines : 1 680 750 015

Outside diameter x Wall thickness

x Length mm : 6.00x1.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.20...3.30

: (3.15...3.35)

Rack travel in mm : 9.00...12.00

Firing order : 1-3-4-2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm: 1400

Rack travel in mm : 9.60...9.70

Del.quantity cm3/: 7.0...7.2

100 s: (6.8...7.4)

Spread cm3: 0.3

100 s: (0.3)

2nd speed rpm : 300.0 Rack travel in mm : 7.4...7.6 Del.quantity cm3/: 0.5...1.1

100 s: (0.3...1.3)

Spread cm3 : 0.3 100 s: (0.3)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1475

travel mm : 8.20...8.30 2nd speed rpm : 300

travel mm : 1.10...1.60

3rd speed rpm : 625

travel mm : 4.00...4.40

4th speed rpm : 1200

travel mm : 6.30...6.70

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

Speed rpm: 1525

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm: 1400

Del.guantity : 70.0...72.0

1000 : (68.0...74.0)

Spread cm3 : 3.50

1000 : (3.50)

RATED SPEED

1st version Control lever position degrees: 106...114 Testing: 1st rack travel in: 8.60 rpm : 1460...1470 Speed 2nd rack travel in: 4.00 Speed rpm: 1550...1580 4th rack travel in: 1680 Speed rpm : 0.00...1.00 LOW IDLE 1 Control lever position degrees: 69...77 Testing: Speed rpm : 100 Minimum rack trave: 10.50 rpm : 300 Speed Rack travel in mm : 7.40...7.60 CONSTANT REGULATION rpm : 375...525 Speed START CUT-OUT Speed 1/min : 220 (240) FUEL DELIVERY CHARACTERISTICS 1st version rpm : 700 Speed Del.quantity cm3/: 54.5...57.5 1000 s: (52.0...60.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 8.60 rpm : 1460...1470 Speed STARTING FUEL DELIVERY rpm : 100 Speed Del.quantity cm3/: 78.0...90.0 1000 s: (75.0...93.0) Rack travel in mm : 13.80...14.00 Remarks:

Note remarks

Test sheet : FOR 6,6 q 1 Edition : 16.01.91

Replaces

Test oil

: ISO-4113

Combination no. : 9 400 085 335

Injection pump

Pump designation : PES6A95D41ORS2800-1

EP type number

: 9 400 084 027

Governor

Governor design.

: RQV375...1400AB1257-

1L

Governer no.

: 9 420 080 305

Customer-spec. information

Customer

: FNH

Engine

: 6.6 NA

1st version kW

: 105.3

Rated speed

: 2800

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C

: 38...42

Overflow valve

: 9 401 083 315

Inlet press., bar: 1.50

Test nozzle holder

assembly

: 0 681 343 009

Openina .

pressure, bar

: 172...175

Test Lines

: 1 680 750 008

Outside diameter

x Wall thickness

x Length mm

: 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm

: 3.15...3.25

: (3.10...3.30)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance $+ - ^{\circ} : 0.50 (0.75)$

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...12.00 & maximum rack tra: 21.00 Difference ° CS : 2.00...3.00

BASIC SETTING

1st speed rpm: 1400

Rack travel in mm : 10.40...10.50

Del.quantity cm3/: 7.3...7.5

100 s: (7.1...7.7)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 375.0

Rack travel in mm: 6.3...6.5

Del.quantity cm3/: 0.4...1.0

100 s: (0.3...1.2)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

rpm : 1420 1st speed

: 8.50...8.60 travel mm

rpm : 350 2nd speed

: 1.30...1.60 travel mm

3rd speed : 700 man

: 4.20...4.60 travel mm

: 1100 4th speed man

travel mm : 6.10...6.40

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1400 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1400 Speed

Del.quantity : 73.0...75.0

1000 : (71.0...77.0)

: 3.50 Spread cm3

1000 : (6.00)

RATED SPEED

1st version Control lever

position degrees: 113...121

Testina:

1st rack travel in: 9.40

Speed rpm : 1450...1460

2nd rack travel in: 4.00

rpm : 1535...1565 Speed

4th rack travel in: 1700

rpm : 0.00...1.00 Speed

LOW IDLE 1 Control lever

position degrees: 67...75

Testing:

Speed rpm : 100 Minimum rack trave: 9.50 rpm : 375

Rack travel in mm : 6.30...6.50

CONSTANT REGULATION

rpm : 460...530 Speed

TORQUE CONTROL

Dimension a mm: 0.50

Torque control curve - 1st version

1st speed rpm : 1400

Rack travel in m: 10.40...10.50

rpm : 500 2nd speed

Rack travel in m: 10.90...11.00

3rd speed rpm : 900

Rack travel in m: 10.90...11.00

rpm : 1100 4th speed

Rack travel in m: 10.70...10.80

START CUT-OUT

1/min : 290 (310) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 500

Del.quantity cm3/: 57.5...60.5

1000 s: (55.0...63.0)

Speed rpm : 900 Del.quantity cm3/ : 70.5...73.5 1000 s: (68.0...76.0)

rpm : 1100

Speed

Del.quantity cm3/: 72.5...75.5

1000 s: (70.0...78.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.40

Speed rpm : 1450...1460

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 115.0...129.0

1000 s: (112.0...132.0)

Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 375

Rack travel in mm : 6.30...6.50 Del.quantity cm3/: 4.5...10.5 1000 s: (3.0...12.0)

Spread cm3 : 3.50

1000 s: (5.50)

Remarks:

Set shutoff stop 1.5...2.0 mm before

shutoff.

Note remarks

Test sheet : MB 11,8 o 2 Edition : 16.01.91

Replaces

: ISO-4113 Test oil

Combination no. : 9 400 087 318

Injection pump

Pump designation : PE6P110A720RS371-1

EP type number : 0 411 816 166

Governor

Governor design: RQ300/1050PA419-1

: 9 420 080 194 Governer no.

Customer-spec. information

: MERCEDES-BENZ Customer

Engine : OM 355-A

1st version kW : 210.0 : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

: 172...175 pressure, bar

Test Lines : 1 680 750 004

Outside diameter x Wall thickness

x Length mm : 6.00X1.50X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90

: (2.75...2.95)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1050

Rack travel in mm : 11.90...12.00

Del.quantity cm3/: 16.1...16.3

100 s: (15.9...16.5)

cm3 : 0.4Spread

100 s: (0.7)

2nd speed rpm : 300.0 Rack travel in mm : 5.9...6.1 Del.quantity cm3/ : 1.4...2.0

100 s: (1.2...2.2)

cm3 : 0.3Spread 100 s: (0.4)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 11301st speed

: 8.40...8.60 travel mm

2nd speed rpm : 1000

: 5.90...6.10 travel mm

3rd speed rpm : 600

: 5.90...6.10 travel mm

4th speed

rpm : 300 : 2.10...2.50 travel mm

: 400 5th speed rpm

: 3.90...4.40 travel mm

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 600

Rack travel in mm : 15.60...16.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

: 161.0...163.0 Del.quantity

1000 : (159.0...165.0)

: 4.00 Spread cm3

1000 : (7.50)

RATED SPEED 1st version Setting point: Speed rpm : 600 Rack travel in mm: 16.0 Testing: 1st rack travel in: 10.90 rpm : 1095...1110 Speed 2nd rack travel in: 4.00 rpm : 1150...1180 Speed 4th rack travel in: 1270 rpm : 0.00...1.00 Speed LOW IDLE 1 Setting point w/out bumper spring rpm : 300 Speed Rack travel in mm: 6.0 Testing: rpm : 100 Speed Minimum rack trave: 7.60 Speed rpm: 300 Rack travel in mm: 5.90...6.10 Rack travel in mm: 2.00 rpm : 440...500 Speed FUEL DELIVERY CHARACTERISTICS 1st version Speed rpm : 500 Del.quantity cm3/: 152.0...156.0 1000 s: (149.0...159.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 10.90 rpm : 1095...1110 Speed STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/: 135.0...155.0 1000 s: (131.0...159.0) Remarks:

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APPLICATION

Omnibus

Note remarks

Test sheet : CAT 7,0 g 2 Edition : 16.01.91 Replaces : 2.5.89 : ISO-4113 Test oil

Combination no. : 9 400 087 401

Injection pump

Pump designation : PES4P100A720LS501 : 9 400 087 051 EP type number

Governor

Governor design. : RQV350...1100PA798-1

: 9 420 080 222 Governer no.

Customer-spec. information

Customer : CATERPILLAR

: 3304 DIT Engine

1st version kW : 85.0 : 2200 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 9 401 087 406

Inlet press., bar: 2.00

Test nozzle holder

: 1 688 901 017 assembly

Openina |

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 2...3

: 3.95...4.05 Prestroke mm

: (3.90...4.10)

Rack travel in mm : 9.00...12.00

Firing order : 1-3-4-2

: 0-90-180-270 Phasing

Tolerance $+ - ^{\circ} : 0.50 (0.75)$

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1100

Rack travel in mm : 9.50...9.60

Del.quantity cm3/: 9.8...10.0

100 s: (9.5...10.2)

Spread cm3 : 0.3

100 s: (0.6)

rpm : 350.0 2nd speed Rack travel in mm: 6.4...6.6

Del.quantity cm3/: 1.2...1.8

100 s: (1.0...1.9) cm3 : 0.3

Spread 100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 1150 1st speed : 8.50...8.60 travel mm

rpm : 350 2nd speed

: 1.30...1.50 travel mm

rpm : 500 3rd speed

: 2.90...3.20 travel mm

4th speed rpm : 700

travel mm : 4.50...4.80

rpm : 900 5th speed

: 6.00...6.20 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1150 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1100 Speed

Del.quantity : 98.0...100.0 1000 : (95.5...102.5) cm3 : 3.50 1000 : (6.00) Spread RATED SPEED 1st version Control lever position degrees: 62...70 Testina: 1st rack travel in: 8.50 Speed rpm: 1130...1140 2nd rack travel in: 4.00 rpm : 1190...1220 Speed 4th rack travel in: 1320 rpm : 0.00...1.00 Speed LOW IDLE 1 Control Lever position degrees: 8...16 Testing: rpm : 100 Speed Minimum rack trave: 8.00 rpm : 350 Rack travel in mm : 4.80...5.00 CONSTANT REGULATION rpm : 370...440 Speed START CUT-OUT 1/min: 290 (310) Speed FUEL DELIVERY CHARACTERISTICS 1st version rpm : 600 Speed Del.quantity cm3/: 98.0...102.0 1000 s: (96.0...104.0) **BREAKAWAY** 1st version 1mm rack travel less than

LOW IDLE

rpm : 350 Speed

Rack travel in mm : 4.80...5.00

Remarks:

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Speed

Speed

full load rack tr: 8.50

STARTING FUEL DELIVERY

rpm : 1130...1140

rpm : 100 Del.quantity cm3/: 157.0...177.0 1000 s: (153.0...181.0) Rack travel in mm : 19.00...21.00

Note remarks

Test sheet : FOR 7,8 i 1
Edition : 16.01.91
Replaces : 24.10.90
Test oil : ISO-4113

Combination no. : 9 400 087 417

Injection pump

Pump designation : PES6P120A720RS3234

EP type number : 9 400 087 068

Governor

Governor design. : RQV350...1150PA923K

Governer no. : 9 420 080 272

Customer—spec. information Customer : FORD (FNH)

Engine : 7.8 Ltr

1st version kW : 141.7 Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 2 417 413 072

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 70...80

Test nozzle holder

assembly : 1 688 901 101

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0.6

Test lines : 1 680 750 008

Outside diameter x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.35...2.45

: 2.35...2.45 : (2.30...2.50)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance $+ - \circ : 0.50 (0.75)$

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1150

Rack travel in mm : 13.10...13.20

Del.quantity cm3/: 15.6...15.8

100 s: (15.3...16.1)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 350.0 Rack travel in mm : 5.4...5.6 Del.quantity cm3/ : 2.6...3.2

100 s: (2.4...3.4)

Spread cm3 : 0.5 100 s: (0.8)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm: 1200

travel mm : 9.50...9.70

2nd speed rpm : 1000

travel mm : 7.80...8.00

3rd speed rpm : 800

travel mm : 6.40...6.80

4th speed rpm : 450

travel mm : 3.80...4.00

5th speed rpm : 350 travel mm : 2.20...2.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150 Aneroid pressure h: 900

Del.quantity : 156.5...158.5

1000 : (153.5...161.5)

: 5.00 Spread cm3

1000 : (9.00)

RATED SPEED

1st version Control lever

position degrees: 117...125

Testing:

1st rack travel in: 12.10

rpm : 1210...1220 Speed

2nd rack travel in: 4.00

rpm : 1320...1350 Speed

4th rack travel in: 1420

rpm : 0.00...1.00 Speed

LOW IDLE 1

Control lever

position degrees: 62...70

Testing:

: 275 Speed rom Minimum rack trave: 7.20 : 350 Speed rom

Rack travel in mm : 5.40...5.60

CONSTANT REGULATION

Speed rpm : 390...460

TORQUE CONTROL

Dimension a mm : ?

Torque control curve - 1st version

1st speed rpm : 1150

Rack travel in m: 13.10...13.20 nd speed rpm : 750 Rack travel in m: 12.00...12.20

2nd speed

: 550 3rd speed rpm

Rack travel in m: 10.80...11.20

Aneroid/Altitude

Compensator Test

1st version

Setting

: 1150 Speed man Pressure hPa : 900

: 13.10...13.20 Rack travel mm

Measurement

1/min: 1150 Speed

1st pressure hPa : -

Rack travel in m: 8.40...8.80

2nd pressure liPa : 200

Rack travel in m: 9.30...9.40

3rd pressure hPa : 440

Rack travel in m: 12.10...12.50

START CUT-OUT

1/min: 290 (310) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900 : 750 Speed rpm

Del.quantity cm3/: 165.0...171.0 1000 s: (162.0...174.0)

cm3 : 8.CO Spread 1000 s: (12.)

Aneroid pressure h: -

Speed rpm : 500 Del.quantity cm3/: 116.0...120.0 1000 s: (114.0...122.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.10

rpm : 1210...1220 Speed

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 160.0...200.0

1000 s: (156.0...204.0)

Rack travel in mm : 11.60...12.40

LOW IDLE

Speed rpm

Rack travel in mm : 5.40...5.60

Del.quantity cm3/: 26.5...32.5 1000 s: (24.5...34.5) Spread cm3 : 5.00

1000 s: (8.00)

Remarks:

Set shutoff stop 1.5...2.0 mm before

shutoff.

Note remarks

: FOR 7,8 i 3 Test sheet : 16.01.91 Edition Replaces : 24.10.90 Test oil : ISO-4113

: 9 400 087 418 Combination no.

Injection pump

Pump designation : PES6P120A720RS3234

EP type number : 9 400 087 068

Governor

: RQV350...1150PA923-1 Governor design.

: 9 420 080 273 Governer no.

Customer-spec. information : FORD (FNH) Customer

: 7.8 Ltr Engine

1st version kW : 179.0 : 2300 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 2 417 413 072

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 70...80

Test nozzle holder

: 1 688 901 101 assembly

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0.6

: 1 680 750 008 Test lines

Outside diameter x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.35...2.45 Prestroke mm : (2.30...2.50)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

Phasing : 0-60-120-180-240-300

Tolerance $+ - ^{\circ} : 0.50 (0.75)$

Time to cyl. no. : 1

BASIC SETTING

rpm : 11501st speed

Rack travel in mm : 13.80...13.90

Del.quantity cm3/: 16.9...17.1

100 s: (16.6...17.4)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 350.0 2nd speed

Rack travel in mm: 5.0...5.2 Del.quantity cm3/: 2.6...3.2

100 s: (2.4...3.4)

cm3 : 0:5 Spread

100 s: (0.8)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 1200 1st speed

: 9.50...9.70 travel mm

rpm : 1000 2nd speed

: 7.80...8.00 travel mm

rpm : 800 3rd speed

travel mm : 6.40...6.80

rpm : 450 4th speed

: 3.80...4.00 : 350 travel mm

5th speed rpm : 2.20...2.50 travel mm

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150

Aneroid pressure h: 900

Spread cm3 : 5.00 1000 : (9.00) RATED SPEED 1st version Control lever position degrees: 118...126 Testing: 1st rack travel in: 12.80 rpm : 1210...1220 Speed 2nd rack travel in: 4.00 : 1340...1370 Speed rom 4th rack travel in: 1450 rpm : 0.00...1.00Speed LOW IDLE 1 Control lever position degrees: 61...69 Testing: Speed rpm : 275 Minimum rack trave: 7.20 : 350 Speed rpm Rack travel in mm : 5.00...5.20 CONSTANT REGULATION rpm : 390...460 Speed TORQUE CONTROL Dimension a mm :? Torque control curve - 1st version 1st speed rpm : 1150 Rack travel in m: 13.80...13.90 2nd speed rpm : 750 Rack travel in m: 12.20...12.40 3rd speed rpm : 550 Rack travel in m: 11.20...11.60 Aneroid/Altitude Compensator Test 1st version Setting : 1150 Speed rpm Pressure hPa : 900 : 13.80...13.90 Rack travel mm Measurement 1/min: 1150 Speed

FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 900 : 750 Speed rpm Del.quantity cm3/: 172.0...178.0 1000 s: (169.0...181.0) cm3 : 8.00 Spread 1000 s: (12.0) Aneroid pressure h: -: 500 Speed rpa Del.quantity cm3/: 108.5...112.5 1000 s: (106.5...114.5) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 12.80 rpm : 1210...1220 Speed STARTING FUEL DELIVERY rpm : 100 Speed Del.quantity cm3/: 135.0...175.0 1000 s: (131.0...179.0) Rack travel in mm : 10.80...11.60 LOW IDLE Speed rpm : 350
Rack travel in mm : 5.00...5.20
Del.quantity cm3/: 26.5...32.5
1000 s: (24.5...34.5) cm3 : 5.00 Spread 1000 s: (8.00) Remarks: Set shutoff stop 1.5...2.0 mm before shutoff.

START CUT-OUT

Speed

1/min : 290 (310)

1st pressure hPa : -

2nd pressure hPa : 365

Rack travel in m: 7.90...8.30

Rack travel in m: 9.40...9.50 3rd pressure hPa : 635 Rack travel in m: 12.40...12.80

Note remarks

Test sheet : FOR 7,8 i Edition : 16.01.91 Replaces : 24.10.90 Test oil : TSO-4113

Combination no. : 9 400 087 419

Injection pump

Pump designation : PES6P120A720RS3234

EP type number : 9 400 087 068

Governor

: RQV350...1150PA923-2 Governor design.

: 9 420 080 274 Governer no.

Customer-spec. information : FORD (FNH) Customer

Engine : 7.8 1tr

: 156.6 1st version kW : 2300 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 2 417 413 072

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 85...95

Test nozzle holder

: 1 688 901 101 assembly

Opening

: 207...210 pressure, bar

Orifice plate

: 0.6 diameter mm

Test Lines : 1 680 750 008

Outside diameter

x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm

: 2.35...2.45 : (2.30...2.50) Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

Phasing : 0-60-120-180-240-300

Tolerance $+ - ^{\circ} : 0.50 (0.75)$

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1150

Rack travel in mm : 13.50...13.60

Del.quantity cm3/: 15.8...16.0

100 s: (15.5...16.3)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 350.0

Rack travel in mm : 5.4...5.6 Del.quantity cm3/ : 2.6...3.2

100 s: (2.4...3.4)

cm3 : 0.5 Spread

100 s: (0.8)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1200

: 9.50...9.70 travel mm

rpm : 10002nd speed

: 7.80...8.00 travel mm

3rd speed rpm : 800

: 6.40...6.80 travel mm

4th speed rpm : 450

: 3.80...4.00 travel mm

: 350 5th speed rpm

: 2.20...2.50 travel mm

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150

Aneroid pressure h: 900

Del.quantity : 138.3...163.5)

cm3 : 5.00Spread 1000 : (9.00) RATED SPEED 1st version Control lever position degrees: 118...126 Testina: 1st rack travel in: 12.50 rpm : 1210...1220 2nd rack travel in: 4.00 rpm : 1315...1345 Speed 4th rack travel in: 1400 rpm : 0.00...1.00 Speed LOW IDLE 1 Control lever position degrees: 62...70 Testing: Speed rpm : 275 Minimum rack trave: 7.00 Speed rpm : 350 Rack travel in mm : 5.40...5.60 CONSTANT REGULATION rpm : 390...460 Speed TORQUE CONTROL Dimension a mm :? Torque control curve - 1st version 1st speed rpm : 1150 Rack travel in m: 13.50...13.60 2nd speed rpm : 750 Rack travel in m: 12.80...13.00 3rd speed rpm : 550 Rack travel in m: 11.40...11.80 Aneroid/Altitude Compensator Test 1st version Setting Speed rpm : 1150 Pressure hPa : 900 Rack travel mm : 13.50...13.60 Measurement 1/min: 1150 Speed 1st pressure hPa : -Rack travel in m: 8.20...8.60 2nd pressure hPa : 300 Rack travel in m: 9.80...9.90

3rd pressure hPa : 500 Rack travel in m: 11.90...12.30

START CUT-OUT 1/min: 290 (310) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 900 Speed rpm: 750
Del.quantity cm3/: 174.0...180.0
1000 s: (171.0...183.0) cm3 : 8.00 Spread 1000 s: (12.0) Aneroid pressure h: rpm : 500 Speed Del.quantity cm3/: 106.5...110.5 1000 s: (104.5...112.5) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 12.50 rpm : 1210...1220 Speed STARTING FUEL DELIVERY rpm : 100 Speed Del.quantity cm3/: 145.0...185.0 1000 s: (141.0...189.0) Rack travel in mm : 11.20...12.00 LOW IDLE Speed rpm : 350
Rack travel in mm : 5.40...5.60
Del.quantity cm3/ : 26.5...32.5 1000 s: (24.5...34.5) cm3 : 5.00 1000 s: (8.00) Spread Remarks: Set shutoff stop 1.5...2.0 mm before shutoff.

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks : FOR 7,8 i 2 : 16.01.91 Test sheet Edition Replaces : 24.10.90 Test oil : ISO-4113

Injection pump

Combination no.

Pump designation : PES6P120A720RS3234 EP type number : 9 400 087 068

Governor

: RQV350...1150PA923-3 Governor design.

: 9 400 087 420

: 9 420 080 275 Governer no.

Customer-spec. information : FORD (FNH) Customer

: 7.8 Ltr Engine

: 167.8 1st version kW : 2300 Rated speed

TEST BENCH REQUIREMENTS

Test oil

: 38...42 inlet temp. °C

Overflow valve

: 2 417 413 072

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 70...80

Test nozzle holder

: 1 688 901 101 assembly

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.35...2.45 : (2.30...2.50) Prestroke mm

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

: 0-60-120-180-240-300 Phasing

: 0.50 (0.75) Tolerance + - °

Time to cyl. no. : 1

BASIC SETTING

rpm : 1150 1st speed

Rack travel in mm : 13.80...13.90

Del.quantity cm3/: 16.3...16.5

100 s: (16.0...16.8)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 350.0 2nd speed Rack travel in mm: 5.4...5.6 Del.quantity cm3/: 2.6...3.2

100 s: (2.4...3.4)

cm3 : 0.5 Spread 100 s: (0.8)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1200

: 9.50...9.70 travel mm 2nd speed rpm : 1000

travel mm : 7.80...8.00

3rd speed rpm : 800

travel mm

: 6.40...6.80

rpm : 450 4th speed

: 3.80...4.00 rpm : 350 travel mm

5th speed

travel mm : 2.20...2.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1150 Speed

Aneroid pressure h: 900

Del.quantity : 703.3...103.3 1000 : (160.5...168.5)

cm3 : 5.00Spread 1000 : (9.00) RATED SPEED 1st version Control Lever position degrees: 118...126 Testing: 1st rack travel in: 12.80 rpm : 1210...1220 Speed 2nd rack travel in: 4.00 rpm : 1335...1365 Speed 4th rack travel in: 1450 rpm : 0.00...1.00 Speed LOW IDLE 1 Control lever position degrees: 62...70 Testing: Speed rpm : 275 Minimum rack trave: 7.20 : 350 Speed riom Rack travel in mm : 5.40...5.60 CONSTANT REGULATION rpm : 390...460 Speed TORQUE CONTROL Dimension a mm :? Torque control curve - 1st version 1st speed rpm : 1150 Rack travel in m: 13.80...13.90 2nd speed rpm : 750 Rack travel in m: 12.30...12.50 3rd speed rpm : 550 Rack travel in m: 11.20...11.60 Aneroid/Altitude Compensator Test 1st version Setting : 1150 Speed rpm hPa : 900 Pressure Rack travel mm : 13.80...13.90 Measurement Speed 1/min: 1150 1st pressure hPa : -

Rack travel in m: 8.30...8.70

Rack travel in m: 9.90...10.00 3rd pressure hPa : 525 Rack travel in m: 12.50...12.90

2nd pressure hPa : 300

1/min: 290 (310) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 900 Speed rpm : 750 Del.quantity cm3/: 166.0...172.0 1000 s: (163.0...175.0) cm3 : 8.00 Spread 1000 s: (12.0) Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/: 108.5...112.5 1000 s: (106.5...114.5) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 12.80 Speed rom : 1210...1220 STARTING FUEL DELIVERY rpm : 100 Speed Del.quantity cm3/: 150.0...190.0 1000 s: (148.0...192.0) Rack travel in mm : 11.50...12.30 LOW IDLE rpm : 350 Speed Rack travel in mm : 5.40...5.60 Del.quantity cm3/ : 26.5...32.5 1000 s: (24.5...34.5) cm3 : 5.00 Spread 1000 s: (8.00) Remarks: Set shutoff stop 1.5...2.0 mm before shutoff.

START CUT-OUT

Note remarks

Test sheet : FOR 6,6 n : 16.01.91 Edition : 24,10,90 Replaces Test oil : ISO-4113

: 9 400 087 421 Combination no.

Injection pump

Pump designation : PES6P100A720RS3235 EP type number : 9 400 087 067

Governor

: RQV350...1300PA923-4 Governor design.

: 9 420 080 276 Governer no.

Customer-spec. information Customer : FORD (FNH)

Engine : 6.6 Ltr

: 125.0 1st version kW Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 2 417 413 072

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 85...95

Test nozzle holder

: 1 688 901 101 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

: 1 680 750 008 Test Lines

Outside diameter x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 3.45...3.55 Prestroke mm

: (3.40...3.60)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasina

Tolerance $+ - \circ : 0.50 (0.75)$

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1300

Rack travel in mm : 14.90...15.00

Del.quantity cm3/: 14.4...14.6

100 s: (14.1...14.9)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 350.0 2nd speed Rack travel in mm: 6.5...6.7 Del.quantity cm3/: 1.4...2.0 100 s: (1.2...2.2)

cm3 : 0.5Spread 100 s: (0.8)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 1300 1st speed

: 8.90...9.10 travel mm

700 2nd speed rpm :

: 5.50...5.70 rpm : 450 travel mm

3rd speed

: 3.50...3.80 travel mm

rpm : 350 4th speed

: 2.20...2.40 travel mm

275 5th speed rom

1.10...1.50 travel mm

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1300 Speed

Aneroid pressure h: 1200

Del.quantity : 144.0...149.0)

cm3 : 5.00 Spread 1000 : (9.00) RATED SPEED 1st version Control lever position degrees: 118...126 Testina: 1st rack travel in: 14.00 rpm : 1360...1370 Speed 2nd rack travel in: 4.00 rpm : 1500...1530 Speed 4th rack travel in: 1600 rpm : 0.00...1.00Speed LOW IDLE 1 Control lever position degrees: 64...72 Testing: Speed : 275 rpm Minimum rack trave: 8.50 rpm : 350 Rack travel in mm : 6.50...6.70 CONSTANT REGULATION rpm : 390...460 Speed TORQUE CONTROL Dimension a mm :? Torque control curve - 1st version rpm : 1300 1st speed Rack travel in m: 14.90...15.00 : 850 rpm 2nd speed Rack travel in m: 12.80...13.00 : 550 3rd speed rpm Rack travel in m: 11.50...11.90 Aneroid/Altitude Compensator Test 1st version Setting Speed rom : 1300 Pressure hPa : 1200 : 14.90...15.00 Rack travel mm Measurement $1/\min : 1300$ Speed 1st pressure hPa : -Rack travel in m: 9.30...9.70

1/min: 290 (310) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1200 rpm : 850 Del.quantity cm3/: 132.0...138.0 1000 s: (129.0...141.0) Spread cm3 : 8.001000 s: (12.0) Aneroid pressure h: -: 500 Speed rom Del.quantity cm3/: 86.0...90.0 1000 s: (84.0...92.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 14.00 rpm : 1360...1370 Speed STARTING FUEL DELIVERY rpm : 100 Speed Del.quantity cm3/: 140.0...180.0 1000 s: (138.0...182.0) Rack travel in mm : 13.10...13.90 LOW IDLE Speed rpm : 350 Rack travel in mm : 6.50...6.70 Del.quantity cm3/: 14.0...20.0 1000 s: (12.0...22.0) cm3 : 5.00 1000 s: (8.00) Spread Remarks: Set shutoff stop 1.5...2.0 mm before shutoff.

START CUT-OUT

2nd pressure hPa : 375

3rd pressure hPa : 715

Rack travel in m: 10.90...11.00

Rack travel in m: 13.50...13.90

Note remarks

Test sheet : FOR 6,6 n 1 Edition : 16.01.91 Replaces : 24.10.90 : ISO-4113 Test oil

Combination no. : 9 400 087 422

Injection pump

Pump designation : PES6P100A720RS3235

EP type number : 9 400 087 067

Governor

: RQV350...1200PA923-5 Governor design.

: 9 420 080 277 Governer no.

Customer-spec. information Customer : FORD (FNH)

Engine : 6.6 Ltr

: 138.0 1st version kW Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 2 417 413 072

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 85...95

Test nozzle holder

: 1 688 901 101 assembly

Openina |

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 3.45...3.55 : (3.40...3.60) Prestroke mm

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

rpm: 1200 1st speed

Rack travel in mm : 15.10...15.20

Del.quantity cm3/: 15.2...15.4

100 s: (14.9...15.7)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 350.02nd speed

Rack travel in mm: 6.5...6.7 Del.quantity cm3/: 1.4...2.0 100 s: (1.2...2.2) Spread cm3 : 0.5

100 s: (0.8)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 1200 1st speed

: 8.90...9.10 travel mm

rpm : 600 2nd speed

5.40...5.60 travel mm

: 450 3rd speed rpm

: 3.80...4.00 travel mm

: 350 4th speed rpm

: 2.20...2.40 travel mm

: 275 5th speed rom

: 1.10...1.50 travel mm

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1200 Speed

Aneroid pressure h: 1200

Del.quantity : 152.0...157.0)

cm3 : 5.00 Spread 1000 : (9.00) RATED SPEED 1st version Control lever position degrees: 118...126 Testing: 1st rack travel in: 14.10 rpm : 1260...1270 Speed 2nd rack travel in: 4.00 Speed rpm: 1420...1450 4th rack travel in: 1500 Speed rpm : 0.00...1.00LOW IDLE 1 Control Lever position degrees: 64...72 Testing: Speed rpm : 275 Minimum rack trave: 8.50 rpm : 350 Rack travel in mm : 6.50...6.70 CONSTANT REGULATION rpm : 390...460 Speed TORQUE CONTROL

Dimension a mm :? Torque control curve - 1st version 1st speed rpm : 1200 Rack travel in m: 15.10...15.20 2nd speed rpm : 750 Rack travel in m: 13.30...13.50 3rd speed rpm : 550
Rack travel in m: 12.30...12.70

Aneroid/Altitude Compensator Test

1st version Setting Speed

: 1200 rpm hPa : 1200 Pressure

Rack travel mm : 15.10...15.20

Measurement

1/min: 1200 Speed

1st pressure hPa : -

Rack travel in m: 9.10...9.50

2nd pressure hPa : 280

Rack travel in m: 10.70...10.80 3rd pressure hPa : 665

Rack travel in m: 13.60...14.00

START CUT-OUT

1/min: 290 (310) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200 rpm : 750 Speed

Del.quantity cm3/: 151.0...157.0 1000 s: (148.0...160.0)

cm3 : 8.00 Spread 1000 s: (12.0)

Aneroid pressure h: -: 500 Speed rpm

Del.quantity cm3/: 78.0...82.0 1000 s: (76.0...84.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 14.10

rpm : 1260...1270 Speed

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 140.0...180.0 1000 s: (138.0...182.0)

Rack travel in mm : 13.10...13.90

LOW IDLE

Speed rpm : 350 Rack travel in mm : 6.50...6.70

Del.quantity cm3/: 14.0...20.0

1000 s: (12.0...22.0) cm3 : 5.00 Spread

1000 s: (8.00)

Remarks:

Set shutoff stop 1.5...2.0 mm before shutoff.

:

Note remarks

Test sheet : CUM 8,3 u Edition : 16.01.91

Replaces

Test oil : ISO-4113

: 9 400 087 449 Combination no.

Injection pump

Pump designation : PES6P120A320RS3264 : 9 400 087 075 EP type number

Governor

Governor design. : RQV350...1100PA973

: 9 420 080 293 Governer no.

Customer-spec. information Customer : CUMMINS

: 6 CTAA - 8.3 L Engine

: 216.6 1st version kW : 2200 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Opening.

: 207...210 pressure, bar

Orifice plate

: 0,8 diameter mm

Test Lines : 1 680 750 015

Outside diameter x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 3.45...3.55 Prestroke mm : (3.40...3.60)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

Phasing : 0-60-120-180-240-300

Tolerance $+ - ^{\circ} : 0.50 (0.75)$

Time to cyl. no. : 1

BASIC SETTING

rpm : 11001st speed

Rack travel in mm : 11.50...11.60

Del.quantity cm3/: 19.9...20.1

100 s: (19.6...20.4)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 350.0 2nd speed

Rack travel in mm: 5.9...6.1 Del.quantity cm3/: 0.5...1.1

100 s: (0.3...1.3)

cm3 : 0.5 Spread 100 s: (0.8)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 1150 1st speed

: 7.00...7.10 travel mm

rpm : 3502nd speed

: 1.40...1.80 travel mm

rpm : 650 3rd speed

: 4.30...4.70 travel mm

rpm : 1400 4th speed

travel mm : 8.80...9.20

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1325

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Aneroid pressure h: 1200

Del.quantity : 199.0...201.0 1000 : (196.0...204.0)

cm3 : 5.00 Spread 1000 : (9.00) RATED SPEED 1st version

Control lever position degrees: 106...114

Testing:

1st rack travel in: 10.50 rpm : 1160...1170 Speed 2nd rack travel in: 4.00

Speed rpm : 1330...1360 4th rack travel in: 1500

Speed rpm : 0.00...1.00

LOW IDLE 1 Control Lever

position degrees: 66...74

Testing:

Speed rpm : 100 Minimum rack trave: 8.00 rpm : 350

Rack travel in mm : 5.90...6.10

CONSTANT REGULATION

rpm : 425...575 Speed

Aneroid/Altitude Compensator Test

1st version Setting

Speed : 500 rom hPa : 1200 Pressure

Rack travel mm : 11.50...11.60

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 8.90...9.10

2nd pressure hPa : 480

Rack travel in m: 9.60...9.70

3rd pressure hPa : 800

Rack travel in m: 10.70...11.00

START CUT-OUT

1/min: 290 (310) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200 rpm : 700 Speed

Del.quantity cm3/: 200.0...204.0 1000 s: (196.5...207.5)

cm3 : 6.00 Spread 1000 s: (12.0)

Aneroid pressure h: rpm : 500 Speed

Del.guantity cm3/: 116.0...119.0

1000 s: (114.0...121.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.50

Speed rpm : 1160...1170

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 235.0...265.0 1000 s: (231.0...269.0)

Rack travel in mm : 19.00...21.00

LOW IDLE

rpm : 350 Speed

Rack travel in mm : 5.90...6.10 Del.quantity cm3/ : 5.0...11.0 1000 s: (3.0...13.0)

cm3 : 5.00 Spread 1000 s: (8.00)

Remarks:

Start of delivery - engine: 16° before

:

TDC

Note remarks

Test sheet : FOR 7,8 p : 16.01.91 Edition

Replaces

Test oil : ISO-4113

Combination no. : 9 400 087 451

Injection pump

: PES6P110A720RS3272 Pump designation

: 9 400 087 076 EP type number

Governor

: RQV350...1200PA863-Governor design.

10

: 9 420 080 300 Governer no.

Customer-spec. information

: FORD (FNH) Customer

: 7.8 L TC Engine

: 206.0 1st version kW Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 9 401 087 403

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 017 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0.6

: 1 680 750 015 Test lines

Outside diameter x Wall thickness

x Length mm : 6.00X1.50X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.65...4.75 : (4.60...4.80)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1200

Rack travel in mm : 12.50...12.60

Del.quantity cm3/: 15.7...15.9

100 s: (15.5...16.1)

cm3 : 0.5Spread

100 s: (0.9)

2nd speed rpm : 350.0Rack travel in mm: 6.3...6.5 Del.quantity cm3/: 1.7...2.1

100 s: (1.5...2.3)

Spread cm3 : 0.3100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 1360 1st speed

: 8.40...8.50 travel mm rpm : 1000 2nd speed

: 5.50...5.90 travel mm 3rd speed 800

rpm

travel mm 4.40...4.80 rpm : 500 4th speed

: 2.60...3.00 travel mm

rpm : 300 5th speed

: 0.90...1.30 travel mm

GUIDE SLEEVE POSITION

Control-lever position Degree: -1

rpm : 1505 Speed

Rack travel in mm : 6.70...9.30

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1200 Speed

Aneroid pressure h: 1100 : 157.0...159.0 Del.quantity 1000 : (155.0...161.0) : 5.00 cm3 Spread 1000 : (9.00) RATED SPEED 1st version Control Lever position degrees: 96...104 Testina: 1st rack travel in: 11.50 rpm : 1260...1270 Speed 2nd rack travel in: 4.00 rpm : 1375...1405 Speed 4th rack travel in: 1500 rpm : 0.00...1.00 Speed LOW IDLE 1 Control lever position degrees: 59...67 Testing: : 100 Speed rpm Minimum rack trave: 8.00 rpm : 350 Rack travel in mm : 6.30...6.50 CONSTANT REGULATION Speed rpm : 390...460 TORQUE CONTROL Dimension a mm : 0.50 Torque control curve - 1st version 1st speed rpm : 1200 Rack travel in m: 12.50...12.60 rpm : 700 2nd speed Rack travel in m: 13.00...13.10 3rd speed rpm : 910 Rack travel in m: 12.90...13.10 4th speed rpm : 1070 Rack travel in m: 12.50...12.60 Aneroid/Altitude Compensator Test 1st version Setting beed : 500 rpm hPa : 1100 Pressure : 13.00...13.10 Rack travel mm Measurement $1/\min : 500$ Speed

2nd pressure hPa : 800 Rack travel in m: 12.60...12.70 3rd pressure hPa : 500 Rack travel in m: 10.90...11.30 START CUT-OUT 1/min : 270 (290) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1100 Speed rpm : 700 Del.quantity cm3/: 135.0...139.0 1000 s: (133.0...141.0) Aneroid pressure h: rpm : 500 Speed Del.quantity cm3/: 79.0...81.0 1000 s: (76.5...83.5) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 11.50 rpm : 1260...1270 Speed STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/ : 140.0...160.0 1000 s: (135.0...165.0) Rack travel in mm : 19.00...21.00 LOW IDLE rpm : 350 Speed Rack travel in mm: 6.30...6.50 Del.quantity cm3/: 17.0...21.0 1000 s: (15.5...23.5) cm3 : 3.50Spread 1000 s: (5.50) Remarks:

Set shutoff stop 1.5...2.0 mm before shutoff.

1st pressure hPa : -

Rack travel in m: 10.40...10.60

Note remarks

Test sheet : FOR 6,6 n 2 : 16.01.91 : 24.10.90 Edition Replaces Test oil : ISO-4113

Combination no. : 9 400 087 452

Injection pump

: PES6P100A720RS3235 Pump designation EP type number : 9 400 087 067

Governor design.

Governor

: RQV350...1275PA923-6

: 9 420 080 301 Governer no.

Customer-spec. information : FORD (FNH) Customer

: 6.6 L Engine

: 123.0 : 2550 1st version kW Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 2 417 413 072

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 85...95

Test nozzle holder

: 1 688 901 101 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

Test Lines : 1 680 750 008

Outside diameter x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 3.45...3.55 Prestroke mm

: (3.40...3.60) Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

: 0-60-120-180-240-300 Phasina

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

rpm: 1275 1st speed

Rack travel in mm : 14.80...14.90

Del.quantity cm3/: 14.3...14.5

100 s: (14.0...14.8)

cm3 : 0.5 Spread

100 s: (0.9)

rpm : 350.0 2nd speed Rack travel in mm: 6.5...6.7 Del.quantity cm3/: 1.4...2.0 100 s: (1.2...2.2)

cm3 : 0.5 Spread 100 s: (0.8)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 1300 1st speed

: 8.90...9.10 travel mm rpm : 700 2nd speed

: 5.50...5.70 travel mm

rpm : 450 3rd speed

: 3.50...3.80 rpm : 350 : 2.20...2.40 travel mm

4th speed

travel mm : 275 5th speed rom

travel mm : 1.10...1.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1275 Aneroid pressure h: 1200

Del.quantity : 143.0...145.0 1000 : (140.0...148.0)

cm3 : 5.00 1000 : (9.00) Spread

RATED SPEED

1st version Control lever

position degrees: 117...125

Testing:

1st rack travel in: 13.80

rpm : 1335...1345 Speed

2nd rack travel in: 4.00

Speed rpm : 1485...1515 4th rack travel in: 1600

Speed rpm : 0.00...1.00

LOW IDLE 1 Control Lever

position degrees: 64...72

Testing:

: 275 Speed rom Minimum rack trave: 8.50 rpm : 350 Speed

Rack travel in mm : 6.50...6.70

CONSTANT REGULATION

rpm : 390...460 Speed

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1275

Rack travel in m: 14.80...14.90

2nd speed rpm : 850

Rack travel in m: 12.80...13.00

3rd speed rpm : 550

Rack travel in m: 11.50...11.90

Aneroid/Altitude Compensator Test

1st version

Setting

Speed : 1275 rpm Pressure hPa : 1200

: 14.80...14.90 Rack travel mm

Measurement

1/min: 1275 Speed

1st pressure hPa : -

Rack travel in m: 9.30...9.70

2nd pressure hPa : 375

Rack travel in m: 10.90...11.00 3rd pressure hPa : 715

Rack travel in m: 13.50...13.90

START CUT-OUT

Speed 1/min: 290 (310)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200 rpm : 850 Speed

Del.quantity cm3/: 132.0...138.0 1000 s: (129.0...141.0)

cm3 : 8.00Spread

1000 s: (12.0)

Aneroid pressure h: rpm : 500 Speed

Del.quantity cm3/: 86.0...90.0

1000 s: (84.0...92.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.80

rpm : 1335...1345 Speed

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 140.0...180.0 1000 s: (138.0...182.0)

Rack travel in mm : 13.10...13.90

LOW IDLE

Speed rpm : 350 Rack travel in mm : 6.50...6.70 Del.quantity cm3/: 14.0...20.0

1000 s: (12.0...22.0)

cm3 : 5.00Spread

1000 s: (8.00)

Remarks:

Set shutoff stop 1.5...2.0 mm before shutoff.

Note remarks

Test sheet : CAS 8,3 m : 18.12.90 Edition : 7.86 Replaces : ISO-4113 Test oil

: 9 400 230 031 Combination no.

Injection pump

Pump designation : PES6A95D42OLS2461

Governor

: RSV375...1050A2B2110 Governor design.

Customer-spec. information Customer : CASE

: A 504 BDT Engine

1st version kW : 112 : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 9 681 273 009

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening |

: 172...175 pressure, bar

Test lines : 9 681 230 706

Outside diameter x Wall thickness

: 6,00x2,00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values __

BEGINNING OF DELIVERY

Prestroke mm : 2.15...2.25

: (2.10...2.30)

Rack travel in mm : 10.50

Firing order : 1-5-3-6-2-4

: 0-60-120-180-240-300 Phasina

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

rpm: 1050 1st speed

Rack travel in mm: 11.00

Del.quantity cm3/: 10.2...10.3

100 s: (9.9...10.6)

cm3 : 0.3Spread

100 s: (-)

rpm : 375 2nd speed Rack travel in mm: 5.80

Del.quantity cm3/: 1.7...2.3 100 s: (-)

cm3 : 0.3Spread 100 s: (-)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800 Speed

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x :?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

: 102.0...103.0 Del.quantity

1000 : (99.0...106.0)

: 3.0 Spread cm3

1000 : (-)

RATED SPEED

1st version

Control lever

position degrees: 41...49

Testing:

1st rack travel in: 10.00 Speed rpm : 1090...1100

2nd rack travel in: 4.00

rpm : 1125...1155 Speed

4th rack travel in: 1230

Speed rpm : 1.30...1.70 LOW IDLE 1

Control lever

position degrees: 16...24

Setting point w/out bumper spring

rpm : 375 Rack travel in mm: 5.30

Testina:

rpm : 100 Speed

Minimum rack trave: 19.00 : 375 Speed rpm

Rack travel in mm : 5.70...5.90

Rack travel in mm: 2.00

: 420...480 Speed rpm

Speed : 600 rpm Maximum rack trave: 1.00

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1050 Rack travel in m: 10.95...11.05

2nd speed rpm : 750

Rack travel in m: 11.00...11.30

3rd speed rpm : 650

Rack travel in m: 11.10...11.30

FUEL DELIVERY CHARACTERISTICS

1st version

rpm : 750 Speed

Del.quantity cm3/: 98.5...104.5 1000 s: (96.5...106.5)

rpm : 650 Speed Del.quantity cm3/: <104.0 1000 s: (<108.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.00

Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/: 135.0...141.0

1000 s: (-) Rack travel in mm : 16.70

LOW IDLE

Speed rpm : 375 Del.quantity cm3/: 17.0...23.0

1000 s: (-)

Remarks:

: CASE # A 155899

Adjustment without torque-control spring retainer with 1 mm less control-rod travel. Increase in full-load delivery with torque-control spring retainer.

Setting and blocking of pointer of start-of-delivery sensor on cyl. 1 start of delivery

Note remarks

: CUM 8,3 a24 : 17.05.90 Test sheet Edition : 2.5.89 Replaces

Test oil : ISO-4113

Combination no. : 9 400 230 089CE

Injection pump

Pump designation : PES6A100D320/3RS2691

EP type number : 9 410 230 025

Governor

Governor design. : RSV400...1100A0C2190

Cust. part no. : 3911959

Customer-spec. information Customer : C.D.C.

: 6 CTA 8.3 ltr. Engine

: 157.0 : 2200 1st version kW Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 017 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

: 2.80...2.90 : (2.75...2.95) Prestroke mm

Rack travel in mm: 10.50

: 1-5-3-6-2-4 Firing order

Phasina : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1100

Rack travel in mm : 12.00...12.10

Del.guantity cm3/: 11.1...11.3

100 s: (10.9...11.5)

cm3 : 0.3Spread

100 s: (0.6)

rpm : 400.0 2nd speed Rack travel in mm : 5.8...6.0 Del.quantity cm3/: 1.6...2.0 100 s: (1.3...2.2)

cm3 : 0.3Spread 100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3 rpm : 800 Speed

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1100 Speed

: 111.0...113.0 Del.quantity 1000 : (109.0...115.0)

: 3.50 Spread cm3

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 44...52

Testing:

1st rack travel in: 11.00 rpm : 1140...1150 Speed 2nd rack travel in: 4.00 Speed rpm: 1190...1220 3rd rack travel in: 4.00 rpm : 1190...1220 4th rack travel in: 1300 Speed rpm : 0.30...1.40 LOW IDLE 1 Control lever position degrees: 23...31 Setting point w/out bumper spring Speed rpm : 400 Rack travel in mm : 5.5 Testing: rpm : 100 Speed Minimum rack trave: 19.00 rpm : 400 Speed Rack travel in mm : 5.80...6.00 TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1100 Rack travel in m: 12.00...12.10 2nd speed rpm : 750 Rack travel in m: 13.30...13.50 FUEL DELIVERY CHARACTERISTICS 1st version rpm : 750 Speed Del.quantity cm3/: 130.5...134.5 1000 s: (128.5...136.5) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 11.00 rpm : 1140...1150 Speed STARTING FUEL DELIVERY

rpm : 100 Del.quantity cm3/: 135.0...155.0

Rack travel in mm : 19.00...21.00

rpm : 400

Rack travel in mm : 5.80...6.00 Del.quantity cm3/: 16.0...20.0 1000 s: (13.5...22.5)

1000 s: (130.0...160.0)

cm3 : 3.50Spread 1000 s: (5.50)

Remarks:

Adjustment without torque-control spring retainer with 1 mm less control-rod travel. Increase in full-load delivery with torque-control spring retainer.

Start-of-delivery mark 11° cam angle after start of delivery cyl. 1

Adjust stop lever to 0.5...1.0 mm before stop.

Speed

LOW IDLE

Speed

Note remarks

: MWM 5,9 a11 Test sheet : 24.11.89 Edition : 4.3.88 Replaces : ISO-4113 Test oil

Combination no. : 9 407 083 279

Injection pump

Pump designation : PES6A80D320RS1271 EP type number : 9 400 083 058

Governor

: RSV350...1400A2B2179 Governor design.

: 9 420 083 165 Governer no.

Customer-spec. information Customer

: D229-6 Engine

: 100.0 1st version kW Rated speed : 2800

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 012

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Opening

pressure, bar : 172...175

: 1 680 750 003 Test Lines

Outside diameter x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insa. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.20...2.30 Prestroke mm

: (2.15...2.35)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance $+ - ^{\circ} : 0.50 (0.75)$

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.50...10.50 & maximum rack tra: 21.00 Difference ° CS : 4.00...5.00

BASIC SETTING

rpm: 1400 1st speed

Rack travel in mm : 10.00...10.10

Del.quantity cm3/ : 5.8...5.9

100 s: (5.7...6.1)

Spread cm3 : 0.2

100 s: (0.4)

2nd speed rpm : 350.0 Rack travel in mm : 7.1...7.3 Del.quantity cm3/: 0.9...1.2

100 s: (0.7...1.3)

cm3 : 0.2 Spread

100 s: (0.3)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3 rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 3.75

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1400 Speed

: 58.5...59.5 Del.quantity

1000 : (57.0...61.0)

: 2.50 cm3 Spread

1000 : (4.00)

RATED SPEED

1st version

Control lever position degrees: 48...56 Testina: 1st rack travel in: 9.00 Speed rpm : 1440...1450 2nd rack travel in: 4.00 Speed rpm : 1480...1510 4th rack travel in: 1650 rpm : 0.30...1.70 Speed LOW IDLE 1 Control Lever position degrees: 17...25 Setting point w/out bumper spring Speed rpm : 350 Rack travel in mm: 6.7 Testing: rpm : 100 Speed Minimum rack trave: 19.00 Speed rpm : 350 Rack travel in mm : 7.10...7.30 Rack travel in mm : 2.00 rpm : 640...700 Speed rpm : 850 Speed Maximum rack trave: 1.00 TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1400 Rack travel in m: 10.00...10.10 2nd speed rpm : 500 Rack travel in m: 10.70...10.80 3rd speed rpm : 800 Rack travel in m: 10.40...10.60 FUEL DELIVERY CHARACTERISTICS 1st version rpm : 500 Speed Del.quantity cm3/: 50.5...52.5 1000 s: (48.5...54.5) rpm : 800 Speed Del.guantity cm3/: 53.0...55.0 1000 s: (51.0...57.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 9.00 rpm : 1440...1450 Speed STARTING FUEL DELIVERY

Remarks:

:

Note remarks

: KHD 1 g 42 : 01.03.91 Test sheet Edition : 3.3.89 Replaces Test oil : ISO-4113

Combination no. : 0 400 464 135

Injection pump

Pump designation : PES4A80D410/3RS1300

EP type number : 0 410 484 015

Governor

Governor design. : RSV325...1150A8C657-

4L

: 0 420 232 522 Governer no.

Customer-spec. information Customer : KHD

: F4L912 Engine

1st version kW : 51.0 : 2300 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Opening |

pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 1.90...2.00 Prestroke mm

: (1.85...2.05)

Rack travel in mm : 9.00...12.00

Firing order : 1-3-4-2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

rpm: 1150 1st speed

Rack travel in mm : 10.50...10.60

Del.quantity cm3/: 5.9...6.0

100 s: (5.8...6.2)

Spread cm3 : 0.2

100 s: (0.4)

2nd speed rpm : 325.0 Rack travel in mm; 7.5...7.7 Del.quantity cm3/: 0.9...1.5

100 s: (0.7...1.6)

cm3 : 0.2Spread 100 s: (0.3)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800 Speed

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 5.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150

: 59.5...60.5 Del.quantity 1000 : (58.0...62.0)

: 2.50 cm3 Spread

: (4.00) 1000

RATED SPEED

1st version

Control lever

position degrees: 102...110

Testing:

1st rack travel in: 9.50

Speed rpm:: 1190...1200

2nd rack travel in: 4.00

rpm : 1220...1250 Speed

3rd rack travel in: 4.00

Speed rpm : 1250...1280 4th rack travel in: 1420 rpm : 0.30...1.40 Speed LOW IDLE 1 Control Lever position degrees: 66...74 Setting point w/out bumper spring Speed rpm : 325 Rack travel in mm: 7.1 Testing: Speed : 100 rom Minimum rack trave: 19.50 Speed rpm : 325
Rack travel in mm : 7.50...7.70
Rack travel in mm : 2.00
Speed : 455...515 Speed rpm TORQUE CONTROL Torque control curve - 1st version rpm : 1150 1st speed Rack travel in m: 10.50...10.60 rpm : 500 2nd speed Rack travel in m: 10.80...10.90 3rd speed rpm : 880 Rack travel in m: 10.60...10.70 FUEL DELIVERY CHARACTERISTICS 1st version : 750 Speed rom Del.quantity cm3/: 54.0...56.0 1000 s: (52.0...58.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 9.50 rpm : 1190...1200 Speed STARTING FUEL DELIVERY Speed : 100 rpm Del.quantity cm3/: 120.0...130.0 1000 s: (117.0...133.0) Rack travel in mm : 19.50...21.00 Remarks:

Remarks:

: FENDT

APPLICATION

Tractor (tractor engines)

Note remarks

Test sheet : MB 8,7 l1
Edition : 27.02.91
Replaces : 25.1.91
Test oil : ISO-4113

Combination no. : 0 400 646 278

Injection pump

Pump designation : PE6A90D410RS2124 EP type number : 0 410 696 141

Governor

Governor design. : RQ375/1275AB812-1L

Governer no. : 0 420 200 115

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : OM 360

1st version kW : 141.0 Rated speed : 2550

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Opening

pressure, bar : 172...175

Test Lines : 1 680 750 014

Outside diameter x Wall thickness

x Length mm : 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm . 2.15...2.25 : (2.10...2.30)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance $+ - ^{\circ} : 0.50 (0.75)$

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1250

Rack travel in mm : 10.20...10.30

Del.quantity cm3/: 8.6...8.7

100 s: (8.4...8.9)

Spread cm3 : 0.3

100 s: (0.4)

2nd speed rpm : 375.0
Rack travel in mm : 6.2...6.4
Del.quantity cm3/ : 1.2...1.8

100 s: (1.0...2.0) Spread cm3 : 0.2

100 s: (0.4)

GUIDE SLEEVE POSITION Control-lever position

Degree: -1 rpm : 1275

Rack travel in mm : 15.60...16.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm: 1250

Del.quantity : 86.0...87.0 1000 : (84.0...89.0)

Spread cm3 : 3.00 1000 : (4.50)

RATED SPEED

1st version

Setting point:

Speed rpm : 1275 Rack travel in mm : 16.0

Testing:

1st rack travel in: 9.20

Speed rpm : 1315...1325

2nd rack travel in: 4.00

Speed rpm : 1385...1415

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 375 Rack travel in mm : 6.3

Testing:

Speed rpm : 275 Minimum rack trave: 8.00 Speed rpm : 375 Rack travel in mm : 6.20...6.40

Rack travel in mm : 2.00 Speed rpm : 445...505

Speed : 550 rpm Maximum rack trave: 1.00

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 800 Del.quantity cm3/: 80.0...83.0 1000 s: (78.0...85.0)

Spread cm3 : -

1000 s: (5.00)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 9.20

rpm : 1315...1325 Speed

:

Remarks:

Note remarks

Test sheet : DAF 6,2 m 3
Edition : 01.03.91
Replaces : 29.5.90
Test oil : ISO-4113

Combination no. : 0 400 676 181

Injection pump

Pump designation : PE6A85D320RS2546 EP type number : 0 410 686 743

Governor

Governor design. : RSV250...750A7C2202R

Governer no. : 0 420 233 202

Customer—spec. information Customer : DAF

Engine : DF615

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Opening |

pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter x Wall thickness

x Length mm : 6.00X1.50X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.15...2.25

: (2.10...2.30)

Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2Phasing : 0-60-120-180-240-300

Tolerance $+ - ^{\circ} : 0.50 (0.75)$

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8.50...9.50 & maximum rack tra: 21.00

Difference ° CS : 3.00...4.00

BASIC SETTING

1st speed rpm: 700

Rack travel in mm : 12.10...12.20

Del.quantity cm3/: 6.6...6.7

100 s: (6.4...6.9)

Spread cm3: 0.3

100 s: (0.5)

2nd speed rpm : 250.0 Rack travel in mm : 8.4...8.6 Del.quentity cm3/: 0.9...1.5

100 s: (0.7...1.7)

Spread cm3 : 0.2 100 s: (0.4)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3
Speed rpm : 800

Rack travel in mm: 0.30...0.70

Governor spring pre-tension Click setting x : 5.75

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm: 700

Del.quantity : 66.5...67.5

1000 : (64.5...69.5)

Spread cm3 : 3.00 1000 : (5.00)

RATED SPEED

1st version Control lever

position degrees: 92...100

Testing:

1st rack travel in: 11.10

Speed mch *:* 750...755 2nd rack travel in: 4.00

: 780...795 Speed rpm

4th rack travel in: 950

Speed rpm : 0.30...1.40

LOW IDLE 1 Control Lever

position degrees: 68...76

Setting point w/out bumper spring

Speed rpm : 250 Rack travel in mm: 8.5 : 250 Speed rpm

Rack travel in mm : 8.40...8.60

Rack travel in mm: 2.00

: 295...355 Speed rom

SET IDLE AUXILIARY SPRING Rack travel in mm : 2.00

STARTING FUEL DELIVERY

Speed : 100 rpm

Rack travel in mm : 19.50...21.00

LOW IDLE

: 250 Speed rpm

Rack travel in mm : 8.40...8.60 Del.quantity cm3/: 9.0...15.0 1000 s: (7.0...17.0) Spread cm3 : 2.50

1000 s: (4.50)

Remarks:

APPLICATION

Generator

Note remarks

Test sheet : DAF 8,3 n 8 Edition : 27.02.91

Replaces : -

Test oil : ISO-4113

Combination no. : 0 400 676 192

Injection pump

Pump designation : PE6A95D41ORS2575 EP type number : 0 410 696 984

Governor

Governor design. : RSV250...750A7C2201-

1L

Governer no. : 0 420 232 563

Customer—spec. information Customer : DAF

Engine : DH 825

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Opening

pressure, bar : 172...175

Test Lines : 1 680 750 015

Outside diameter x Wall thickness

x Length mm : 6.00x1.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.00...2.10

: (1.95...2.15) Rack travel in mm : 7.50...10.50

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance $+ - ^{\circ} : 0.50 (0.75)$

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8.50...9.50 & maximum rack tra: 21.00

Difference ° CS : 3.00...4.00

BASIC SETTING

1st speed rpm: 700

Rack travel in mm : 13.20...13.30

Del.quantity cm3/: 11.0...11.1

100 s: (10.8...11.3)

Spread cm3:0.3

100 s: (0.6)

2nd speed rpm : 250.0
Rack travel in mm : 6.0...6.2
Del.quantity cm3/: 0.7...1.3

100 s: (0.5...1.4)

Spread cm3 : 0.3 100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

Speed rpm : 800 Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm: 700

Del.quantity : 110.5...111.5 1000 : (108.5...113.5)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version Control lever

position degrees: 90...98

Testing:

1st rack travel in: 12.20 Speed rpm : 750...755 2nd rack travel in: 4.00 rpm : 780...795 Speed 4th rack travel in: 950 rpm : 0.30...1.40 Speed

LOW IDLE 1 Control Lever

position degrees: 66...74 Setting point w/out bumper spring

Speed rpm : 250 Rack travel in mm : 6.1

Testing:

rpm : 100 Speed Minimum rack trave: 19.50 rpm : 250 Speed

Rack travel in mm: 6.00...6.20 Rack travel in mm: 2.00 Speed rpm: 255...315

SET IDLE AUXILIARY SPRING Rack travel in mm: 2.00

STARTING FUEL DELIVERY

rpm : 100 Speed

Rack travel in mm : 19.50...21.00

LOW IDLE

rpm : 250 Speed

Rack travel in mm: 6.00...6.20 Del.quantity cm3/: 7.0...13.0 1000 s: (5.5...14.5) Spread cm3: 3.50

1000 s: (5.50)

Remarks:

APPLICATION

Generator

Note remarks

Test sheet : RAB 9,7 b 1 : 01.03.91 Edition : 25.1.91 Replaces : ISO-4113 Test oil

: 0 400 846 543 Combination no.

Injection pump

Pump designation : PES6A95D42OLS2595 EP type number : 0 410 896 930

Governor

Governor design. : RQ200/1100AB1210R : 0 420 201 643 Governer no.

Customer-spec. information Customer : RABA

: D2156MT6U Engine

1st version kW : 188.0 : 2200 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Openina

: 172...175 pressure, bar

Test Lines : 1 680 750 014

Outside diameter x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.00...2.10 : (1.95...2.05)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance $+ - ^{\circ} : 0.50 (0.75)$

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1100

Rack travel in mm : 12.60...12.70

Del.quantity cm3/: 12.6...12.8

100 s: (12.4...13.0)

cm3 : 0.3Spread

100 s: (0.6)

2nd speed rpm : 200.0 Rack travel in mm : 7.3...7.5

Del.quantity cm3/: 0.9...1.5 100 s: (0.6...1.7)

cm3 : 0.3Spread 100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -2

Speed rpm: 600 Rack travel in mm: 19.20...20.60

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm: 1100 Aneroid pressure h: 700

Del.quantity : 120.3...120.5)

: 3.00 Spread cm3

1000 : (6.00)

RATED SPEED

1st version

Setting point:

Speed rpm Rack travel in mm: 19.9

Testing:

1st rack travel in: 11.60

Speed rpm : 1145...1160 2nd rack travel in: 4.00

rpm : 1190...1220 Speed

LOW IDLE 1 Setting point w/out bumper spring rpm : 200 Rack travel in mm: 6.4 Testing: Speed rpm: 100 Minimum rack trave: 7.60 : 200 Speed rpm Rack travel in mm : 6.30...6.50 Rack travel in mm : 2.00 rpm : 320...360 Speed Speed : 450 rpm Maximum rack trave: 1.00 TORQUE CONTROL Dimension a mm : 0.55Torque control curve - 1st version 1st speed rpm : 1100 Rack travel in m: 12.60...12.70 2nd speed rpm : 500 Rack travel in m: 14.20...14.30 rpm : 820 3rd speed Rack travel in m: 13.70...13.90 4th speed rpm : 995 Rack travel in m: 12.90...13.10 Aneroid/Altitude Compensator Test 1st version Setting Speed rpm : 500 Pressure hPa : 700 Rack travel mm : 13.70...13.80 Measurement $1/\min : 500$ Speed 1st pressure hPa : -Rack travel in m: 11.10...11.20 2nd pressure hPa : 250 Rack travel in m: 13.10...13.20 3rd pressure hPa : 150 Rack travel in m: 11.60...11.80 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 700 Speed rpm : 700 Del.quantity cm3/: 135.0...138.0 1000 s: (133.0...140.0) Aneroid pressure h: rpm Del.quantity cm3/: 82.5...84.5 1000 s: (80.5...86.5)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 11.60 rpm : 1145...1160 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 177.0...187.0 1000 s: (174.0...190.0)

Remarks:

Check electrically unlatched starting fuel delivery (EES) with 24 volt.

On activation of the starting solenoid, the start position must be reached.

APPLICATION

Omnibus

Note remarks

Test sheet : KHD 3,0 f
Edition : 18.02.91
Replaces : 21.5.90
Test oil : ISO-4113

Combination no. : 0 400 863 016

Injection pump

Pump designation: PES3A85D410/3RS2780

EP type number : 0 410 883 987

Governor

Governor design. : RSV325...1250A2C2239

-1L

Governer no. : 0 420 232 533

Customer spec. information Customer : KHD

Engine : F3L912 F

1st version kW : 40.0 Rated speed : 2500

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Opening

pressure, bar : 172...175

Test Lines : 1 680 750 014

Outside diameter x Wall thickness

x Length mm : 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.95...3.05

: (2.90...3.10)

Rack travel in mm : 9.00...12.00

Firing order : 1- 3- 2

Phasing : 0-120-240

Tolerance $+ - \circ : 0.50 (0.75)$

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1235

Rack travel in mm : 11.40...11.50

Del.quantity cm3/: 6.4...6.5

100 s: (6.2...6.7)

Spread cm3 : 0.3

100 s: (0.5)

2nd speed rpm : 325.0 Rack travel in mm : 8.1...8.3 Del.quant/ty cm3/ : 1.0...1.6 100 s: (0.8...1.8)

Spread cm3 : 0.2

100 s: (0.4)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3 rpm : 800

Speed rpm : 800 Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 5.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm: 1235

Del.quantity : 64.0...65.0

1000 : (62.0...67.0)

Spread cm3 : 3.00

1000 : (5.00)

RATED SPEED

1st version Control lever

position degrees: 98...106

Testing:

1st rack travel in: 10.40

Speed rpm : 1275...1285

2nd rack travel in: 4.00

rpm : 1345...1375 Speed 3rd rack travel in: 4.00 Speed rpm : 1355...1385 4th rack travel in: 1520 Speed rpm : 0.30...1.40LOW IDLE 1 Control lever position degrees: 68...76 Setting point w/out bumper spring rpm Rack travel in mm: 5.5 Testing: Speed rpm : 100 Minimum rack trave: 19.50 Speed : 325 rpm Rack travel in mm : 5.90...6.10 Rack travel in mm : 2.00 rpm : 435...495 Speed TORQUE CONTROL Torque control curve - 1st version rpm : 1235 1st speed Rack travel in m: 11.40...11.50 2nd speed rpm : 500 Rack travel in m: 11.60...11.70 3rd speed rpm : 840 Rack travel in m: 11.50...11.60 FUEL DELIVERY CHARACTERISTICS 1st version : 750 Speed rom Del.quantity cm3/: 55.0...57.0 1000 s: (52.5...59.5) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 10.40 Speed rpm : 1275...1285 STARTING FUEL DELIVERY rpm : 100 Speed Del.quantity cm3/: 115.0...125.0 1000 s: (112.0...128.0) Rack travel in mm : 19.50...21.00 Remarks:

Note remarks

: KHD 1 g 3 : 01.03.91 Test sheet Edition Replaces : 15.12.89 : ISO-4113 Test oil

: 0 400 864 054 Combination no.

Injection pump

Pump designation : PES4A85D410/3RS2638

: 0 410 884 950 EP type number

Governor

: RSV325...1150A0C2168 Governor design.

: 0 420 232 364 Governer no.

Customer-spec. information Customer : KHD

Engine : BF4L913

1st version kW : 66.0 Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

Test Lines : 1 680 750 014

Outside diameter x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.50...2,60

: (2.45...2.65)

Rack travel in mm : 9.00...12.00

Firing order : 1-3-4-2

: 0-90-180-270 Phasing

Tolerance + - * : 0.50 (0.75)

BASIC SETTING

rpm: 1110 1st speed

Rack travel in mm : 12.30...12.40

Del.quantity cm3/: 8.0...8.1

100 s: (7.8...8.3)

cm3 : 0.3Spread

100 s: (0.4)

rpm : 325.0 2nd speed Rack travel in mm: 8.1...8.3 Del.quantity cm3/: 0.9...1.5

100 s: (0.7...1.7)

cm3 : 0.2 Spread 100 s: (0.4)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

Speed rpm: 800 Rack travel in mm: 0.30...0.70

Governor spring pre-tension Click setting x : 4.75

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1110 Speed

: 80.0...81.0 Del.quantity 1000 : (78.0...83.0)

: 3.00 Spread cm3

: (4.50) 1000

RATED SPEED

1st version Control lever

position degrees: 101...109

Testing:

1st rack travel in: 11.30

rpm : 1155...1165 Speed

2nd rack travel in: 4.00

rpm : 1250...1280 Speed

3rd rack travel in: 4.00

rpm : 1320...1350 Speed 4th rack travel in: 1430 Speed rom : 0.30...1.40 LOW IDLE 1 Control lever position degrees: 77...85 Setting point wout bumper spring rpm Rack travel in mm: 7.2 Testing: Speed : 100 rpm Minimum rack trave: 19.50 Speed rpm : 325 Rack travel in mm : 7.60...7.80 Rack travel in mm : 2.00 Speed rpm : 530...580 TORQUE CONTROL Torque control curve - 1st version rpm : 1110 1st speed Rack travel in m: 12.30...12.40 2nd speed rpm : 500 Rack travel in m: 13.10...13.20 4th speed rpm : 940 Rack travel in m: 12.70...12.90 FUEL DELIVERY CHARACTERISTICS 1st version rpm : 700 Speed Del.quantity cm3/: 79.5...81.5 1000 s: (77.0...84.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 11.30 rpm : 1155...1165 Speed STARTING FUEL DELIVERY : 100 rpm Del.quantity cm3/: 100.0...110.0 1000 s: (97.0...113.0) Rack travel in mm : 16.80...17.20 Remarks: APPLICATION

Tractor (tractor engines)

Note remarks

Test sheet : KHD 4,1 i Edition : 18.02.91 : 21.5.90 Replaces : ISO-4113 Test oil

Combination no. : 0 400 864 075

Injection pump

Pump designation : PES4A85D410/3RS2781

: 0 410 884 945 EP type number

Governor

Governor design. : RSV325...1250A2C2239

-1L

: 0 420 232 533 Governer no.

Customer-spec. information Customer : KHD

: F4L912F Engine

: 54.0 : 2500 1st version kW Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

: 172...175 pressure, bar

Test lines : 1 680 750 014

Outside diameter x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.95...3.05 Prestroke mm

: (2.90...3.10)

Rack travel in mm : 9.00...12.00

Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

rpm: 1235 1st speed

Rack travel in mm : 11.40...11.50

Del.guantity cm3/: 6.4...6.5

100 s: (6.2...6.7)

Spread cm3 : 0.3

100 s: (0.5)

2nd speed rpm : 325.0
Rack travel in mm : 8.1...8.3
Del.quantity cm3/: 1.0...1.6

100 s: (0.8...1.8)

cm3 : 0.2Spread

100 s: (0.4)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 5.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1235 Speed

: 64.0...65.0 Del.quantity 1000 : (62.0...67.0)

: 3.00 cm3

Spread 1000 : (5.00)

RATED SPEED

1st version Control lever

position degrees: 98...106

Testing:

1st rack travel in: 10.40

rpm : 1275...1285 Speed

2nd rack travel in: 4.00

rpm : 1345...1375 Speed

3rd rack travel in: 4.00

Speed rpm : 1355...1385 4th rack travel in: 1520 Speed rpm : 0.30...1.40 LOW IDLE 1 Control lever position degrees: 68...76 Setting point w/out bumper spring rpm : 325 Rack travel in mm: 5.5 Testing: Speed rpm : 100 Minimum rack trave: 19.50 rpm : 325 Speed Rack travel in mm : 5.90...6.10 Rack travel in mm : 2.00 Speed rpm : 435...495 TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1235 Rack travel in m: 11.40...11.50 2nd speed rpm : 500 Rack travel in m: 11.60...11.70 3rd speed rpm : 840 Rack travel in m: 11.50...11.60 FUEL DELIVERY CHARACTERISTICS 1st version Speed rpm : 750 Del.quantity cm3/ : 55.0...57.0 1000 s: (52.5...59.5) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 10.40 rpm : 1275...1285 Speed STARTING FUEL DELIVERY rpm : 100 Speed Del.quantity cm3/: 115.0...125.0 1000 s: (112.0...128.0) Rack travel in mm : 19.50...21.00 Remarks:

Note remarks

: KHD 1 g 48 : 27.02.91 Test sheet Edition Replaces : 1.2.91 Test oil : ISO-4113

Combination no. : 0 400 864 083

Injection pump

Pump designation : PES4A95D410/3RS2789

: 0 410 894 995 EP type number

Governor

Governor design. : RSV325...1175A5C2163

-6L

: 0 420 232 548 Governer no.

Customer—spec. information Customer : KHD

: F4I 913 Engine

: 55.0 1st version kW Rated speed : 2350

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening |

pressure, bar : 172...175

: 1 680 750 014 Test Lines

Outside diameter x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 3.00...3.10 Prestroke mm

: (2.95...3.15)

Rack travel in mm : 9.00...12.00

: 1-3-4-2 Firing order

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

rpm: 1175 1st speed

Rack travel in mm : 11.90...12.00

Del.quantity cm3/: 7.4...7.6

100 s: (7.2...7.8)

cm3 : 0.3Spread

100 s: (0.6)

rpm : 325.0 2nd speed Rack travel in mm: 9.3...9.5 Del.quantity cm3/: 1.0...1.6

100 s: (0.7...1.8) cm3 : 0.3 Spread

100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800 Speed Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 3.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1175 Speed

: 74.5...76.5 1000 : (72.5...78.5) Del.quantity

: 3.50 Spread cm3

1000 : (6.00)

RATED SPEED

1st version Control Lever

position degrees: 97...105

Testing:

1st rack travel in: 10.90

rpm : 1215...1225 Speed

2nd rack travel in: 4.00

rpm : 1245...1275 Speed

3rd rack travel in: 4.00

Speed rpm: 1260...1290
4th rack travel in: 1430
Speed rpm: 0.30...1.40

LOW IDLE 1
Control lever
position degrees: 65...73
Setting point w/out bumper spring
Speed rpm: 325
Rack travel in mm: 5.5

Testing:
Speed rpm: 100
Minimum rack trave: 19.50
Speed rpm: 325

Minimum rack trave: 19.50
Speed rpm : 325
Rack travel in mm : 5.90...6.10
Rack travel in mm : 2.00
Speed rpm : 395...455

TORQUE CONTROL
Torque control curve - 1st version
1st speed rpm : 1175
Rack travel in m: 11.90...12.00
2nd speed rpm : 500
Rack travel in m: 12.30...12.40
4th speed rpm : 950
Rack travel in m: 12.10...12.30

FUEL DELIVERY CHARACTERISTICS

1st version Speed rpm : 500 Del.quantity cm3/: 58.5...61.5 1000 s: (56.0...64.0) Speed rpm : 800 Del.quantity cm3/: 69.0...72.0 1000 s: (66.5...74.5)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 10.90 Speed rpm : 1215...1225

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 120.0...130.0 1000 s: (117.0...133.0) Rack travel in mm : 19.50...21.00

Remarks:

: DX4.31

APPLICATION

Tractor (tractor engines)

M14

Note remarks

Test sheet : MWM 4,1 b 5 : 27.02.91 Edition Replaces : 7.1.91 Test oil : ISO-4113

Combination no. : 0 400 864 084

Injection pump

Pump designation : PES4A90D320/3RS2659

EP type number : 0 410 894 028

Governor

: RSV325...1250A0C2182 Governor design.

-8R

: 0 420 233 277 Governer no.

Customer-spec. information Customer : MWM

: D226B-4 Engine

1st version kW : 74.0 : 2500 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

: 172...175 pressure, bar

: 1 680 750 014 Test lines

Outside diameter x Wall thickness

x Length mm : 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY Test pressure, bar: 25...27

: 2,95...3.05 Prestroke mm

: (2.90...3.10)

Rack travel in mm : 9.00...12.00

Firing order : 1-3-4-2

Phasing : 0-90-180-270

Tolerance $+ - ^{\circ} : 0.50 (0.75)$

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...0.00 & maximum rack tra: 21.00 Difference ° CS : 3.50...4.50

BASIC SETTING

rom: 1175 1st speed

Rack travel in mm : 10.70...10.80

Del.quantity cm3/: 8.0...8.2

100 s: (7.8...8.4)

cm3 : 0.3 Spread

100 s: (0.5)

rpm : 325.0 2nd speed Rack travel in mm: 6.7...6.9 Del.quantity cm3/: 0.8...1.2

100 s: (0.6...1.4)

cm3 : 0.2Spread 100 s: (0.4)

GUIDE SLEEVE POSITION Control-lever position Degree: -3

rpm : 800

Rack travel in mm: 0.30...0.70

Governor spring pre-tension Click setting x : 3.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1175 Speed Aneroid pressure h: 900

: 80.5...82.5 Del.quantity 1000 : (78.5...84.5)

cm3 : 3.00 Spread

1000 : (5.00)

RATED SPEED

1st version Control lever

position degrees: 89...97

Speed rpm : 800 Del.quantity cm3/: 84.5...86.5 Testing: 1000 s: (82.0...89.0) 1st rack travel in: 9.70 Speed rpm: 1215...1225 2nd rack travel in: 4.00 Aneroid pressure h: 215 : 500 rpm Speed rpm : 1240...1270 3rd rack travel in: 4.00 Del.quantity cm3/: 68.0...70.0 1000 s: (65.5...72.5) rpm : 1250...1280 Speed Aneroid pressure h: rpm_ : 500 4th rack travel in: 1415 Speed Del.quantity cm3/: 64.0...65.0 1000 s: (62.0...67.0) rpm : 0.30...1.40 Speed LOW IDLE 1 Control Lever position degrees: 62...70 BREAKAWAY Setting point w/out bumper spring Speed rpm : 325 1st version Rack travel in mm: 5.5 1mm rack travel less than full load rack tr: 9.70 Testing: rpm : 1215...1225 Speed rpm : 100 Speed Minimum rack trave: 19.50 Speed rpm: 325
Rack travel in mm: 5.90...6.10
Rack travel in mm: 2.00
Speed STARTING FUEL DELIVERY rpm : 455...515 : 100 Speed Speed rpm Del.quantity cm3/: 130.0...140.0 1000 s: (127.0...143.0) TORQUE CONTROL Rack travel in mm : 19.50...21.00 Torque control curve - 1st version 1st speed rpm : 1175 Rack travel in m: 10.70...10.80 LOW IDLE 2nd speed rpm : 500 Rack travel in m: 11.50...11.60 4th speed rpm : 920 Speed rpm : 325 Rack travel in mm : 6.70...6.90 Rack travel in m: 11.00...11.20 Del.quantity cm3/: 8.0...12.0 1000 s: (6.0...14.0) Aneroid/Altitude cm3 : 2.50 Spread 1000 s: (4.50) Compensator Test Remarks: 1st version : FENDT Setting Speed : 500 APPLICATION rpm hPa : 900 Pressure : 11.50...11.60 Rack travel mm Tractor (tractor engines) Measurement 1/min: 500 Speed 1st pressure hPa : -Rack travel in m: 10.50...10.60 2nd pressure hPa : 215 Rack travel in m: 10.90...11.00 3rd pressure hPa : 180 Rack travel in m: 10.70...10.90 FUEL DELIVERY CHARACTERISTICS 1st version

Aneroid pressure h: 900

Rack travel in mm : 9.00...12.00 BOSCH INJ. PUMP TEST SPECIFICATIONS Firing order : 1- 3- 4- 2 Note remarks Test sheet : KHD 1 0 8 Edition : 18.02.91 Phasina : 0-90-180-270 : 16.1.91 Replaces : ISO-4113 Tolerance + - ° Test oil : 0.50 (0.75) : 0 400 864 087 Combination no. BASIC SETTING Injection pump 1st speed rpm: 1060 Pump designation : PES4A85D410/3RS2799 Rack travel in mm : 11.30...11.40 : 0 410 884 944 EP type number Governor : RSV325...1075A8C2253 Governor design. Del.quantity cm3/: 7.8...7.9 -11100 s: (7.6...8.1) : 0 420 232 555 Governer no. cm3 : 0.3Customer-spec. information Spread Customer : KHD 100 s: (0.5) : BF4L913 Engine 2nd speed rpm : 325.0 Rack travel in mm : 7.7...7.9 1st version kW : 65.0 Del.quantity cm3/: 1.2...1.8 100 s: (1.0...2.0) : 2150 Rated speed TEST BENCH REQUIREMENTS cm3 : 0.2Spread 100 s: (0.4) Test oil inlet temp. °C : 38...42 GUIDE SLEEVE POSITION Control-Lever position Overflow valve Degree: -3 rpm : 800 : 1 417 413 000 Speed Rack travel in mm : 0.30...0.70 Inlet press., bar: 1.50 Governor spring pre-tension Test nozzle holder Click setting x : 4.25 : 0 681 343 009 assembly FULL LOAD DELIV. AT FULL LOAD STOP Openina . pressure, bar : 172...175 1st version rpm : 1060 Speed Aneroid pressure h: 1000 : 78.0...79.0 Test lines : 1 680 750 014 Del.quantity 1000 : (76.0...81.0) Outside diameter : 3.00 Spread cm3 1000 : (5.00) x Wall thickness x Length mm : 6.00X2.00X600 RATED SPEED (A) Injection pump setting values Insp. values in parentheses 1st version Set equal delivery quant. Control Lever per values position degrees: 94...102

Testing:

Speed

Speed

1st rack travel in: 10.30

2nd rack travel in: 4.00

rpm : 1100...1110

rpm : 1130...1160

BEGINNING OF DELIVERY

Prestroke mm

Test pressure, bar: 25...27

: 2.50...2.60

: (2.45...2.65)

Speed

3rd rack travel in: 4.00

rpm : 1145...1175 4th rack travel in: 1310

Speed rpm : 0.30...1.40

LOW IDLE 1 Control Lever

position degrees: 61...69 Setting point w/out bumper spring

Speed rpm : 325 Rack travel in mm : 5.5

Testing:

rpm : 100 Speed Minimum rack trave: 19.50

Speed rpm : 325
Rack travel in mm : 5.90...6.10
Rack travel in mm : 2.00
Speed rpm : 395...455

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1060 Rack travel in m: 11.30...11.40 2nd speed rpm : 500

Rack travel in m: 11.70...11.80

4th speed rpm : 870

Rack travel in m: 11.40...11.60

Aneroid/Altitude Compensator Test

1st version Setting

rpm : 500 Speed hPa : 1000 Pressure

Rack travel mm : 11.70...11.80

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 10.90...11.00

2nd pressure hPa : 330

Rack travel in m: 11.50...11.60 3rd pressure hPa : 250

Rack travel in m: 11.20...11.40

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000 rpm : 750

Del.quantity cm3/: 76.0...78.0 1000 s: (73.5...80.5)

Aneroid pressure h: -

Speed rpm : 500 Del.quantity cm3/: 58.5...59.5

1000 s: (56.5...61.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.30

rpm : 1100...1110 Speed

STARTING FUEL DELIVERY

: 100 Speed rpm

Del.quantity cm3/: 120.0...130.0 1000 s: (117.0...133.0) Rack travel in mm: 17.60...18.00

Remarks:

APPLICATION

Wheel loader

Excavator

M18

Note remarks

: KHD 4,1 i 2 : 01.03.91 Test sheet Edition

Replaces

: ISO-4113 Test oil

Combination no. : 0 400 864 090

Injection pump

Pump designation : PES4A85D410/3RS2781

EP type number : 0 410 884 945

Governor

Governor design. : RS325/1250ADC2087-1L

Governer no. : 0 420 220 012

Customer-spec. information : KHD Customer

: F4L912F Engine

1st version kW : 54.0 Rated speed : 2500

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

: 1 680 750 014 Test lines

Outside diameter x Wall thickness

x Length mm : 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY Test pressure, bar: 25...27

: 2.95...3.05 Prestroke mm : (2.90...3.10)

Rack travel in mm : 9.00...12.00

Firing order : 1- 3- 4- 2

: 0-90-180-270 Phasing

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm: 1235

Rack travel in mm : 11.30...11.40

Del.quantity cm3/: 6.4...6.5

100 s: (6.2...6.7)

Spread cm3 : 0.3

100 s: (0.5)

2nd speed rpm : 325.0 Rack travel in mm : 7.9...8.1 Del.quantity cm3/: 1.0...1.6

100 s: (0.8...1.8)

cm3 : 0.3Spread 100 s: (0.4)

GUIDE SLEEVE POSITION Control-lever position Degree: -3

rpm : 800 Speed

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 5.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1235 Speed

Del.quantity : 64.0...65.0 1000 : (62.0...67.0) cm3 : 3.00

Spread

1000 : (5.00)

RATED SPEED

1st version

Control lever

position degrees: 99...107

Testing:

1st rack travel in: 10.40

rpm : 1275...1285 Speed

2nd rack travel in: 4.00

rpm : 1330...1360 Speed

4th rack travel in: 1490

rpm : 0.30...1.40Speed

LOW IDLE 1 Control Lever position degrees: 71...79 Setting point w/out bumper spring Speed rpm : 325° Rack travel in mm: 6.0 Testing: : 100 Speed **LDW** Minimum rack trave: 19.50 Speed : 325 rpm Rack travel in mm : 5.90...6.10 Rack travel in mm: 2.00 rom: 1270..1330 Speed TORQUE CONTROL Dimension a mm : 0.20 Torque control curve - 1st version 1st speed rpm : 1235 Rack travel in m: 11.30...11.40 rpm : 500 2nd speed Rack travel in m: 11.40...11.60 rpm : 1000 4th speed Rack travel in m: 11.30...11.50 5th speed rpm : 360 Rack travel in m: 13.00...13.60 FUEL DELIVERY CHARACTERISTICS 1st version rpm : 750 Speed Del.quantity cm3/: 55.0...57.0 1000 s: (52.5...59.5) : 1000 Speed rpm Del.quantity cm3/: 62.0...64.0 1000 s: (59.5...66.5) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 10.40 Speed rpm : 1275...1285 STARTING FUEL DELIVERY rpm : 100 Speed Del.quantity cm3/: 110.0...120.0 1000 s: (107.0...123.0) Rack travel in mm : 19.50...21.00 Remarks:

Note remarks

Test sheet : CUM 8,3 a63 : 18.02.91 Edition : 17.9.90 Replaces Test oil : ISO-4113

Combination no. : 0 400 866 132

Injection pump

Pump designation : PES6A100D320/3RS2691

EP type number : 9 410 230 025

Governor

: RSV500...1250A0c2190 Governor design.

-28R

: 0 420 233 231 Governer no.

Customer-spec. information Customer : C.D.C.

: 6 CT-I 8.3ltr. Engine

: 139.0 1st version kW : 2500 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 101 assembly

Openina

: 207...210 pressure, bar

Orifice plate

: 0,6 diameter mm

: 1 680 750 014 Test lines

Outside diameter x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant. per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.80...2.90

: (2.75...2.95) Rack travel in mm : 10.50

Firing order : 1-5-3-6-2-4

Phasina : 0-60-120-180-240-300

Tolerance + - * : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1250

Rack travel in mm : 11.40...11.50

Del.quantity cm3/: 10.2...10.4

100 s: (10.0...10.6)

cm3 : 0.4Spread

100 s: (0.6)

2nd speed rpm : 500.0 Rack travel in mm : 5.5...5.7 Del.quantity cm3/ : 1.3...1.7 100 s: (1.1...1.9)

cm3 : 0.6

Spread 100 s: (0.8)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800 Speed Rack travel in mm: 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

rpm : 1250 : 102.5...104.5 Del.quantity

1000 : (100.5...106.5)

: 4.00 Spread cm3

: (6.50) 1000

RATED SPEED

1st version

Control lever

position degrees: 43...51

Testing:

1st rack travel in: 10.40 rpm : 1315...1325 Speed 2nd rack travel in: 4.00 rpm : 1365...1375 Speed 3rd rack travel in: 4.00 rpm : 1365...1395 Speed 4th rack travel in: 1450 Speed rpm : 0.30...1.40LOW IDLE 1 Control lever position degrees: 19...27 Setting point w/out bumper spring rpm : 500 Speed Rack travel in mm: 5.1 Testing: : 100 Speed rpm Minimum rack trave: 19.00 rpm : 500 Speed Rack travel in mm : 5.50...5.70 **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 10.40 rpm : 1315...1325 Speed STARTING FUEL DELIVERY Speed : 100 rom Del.quantity cm3/: 145.0...165.0 1000 s: (140.0...170.0) Rack travel in mm : 19.00...21.00 LOW IDLE Speed rpm : 500 Rack travel in mm : 5.50...5.70 Del.quantity cm3/ : 13.0...17.0 1000 s: (11.0...19.0) Spread cm3 : 6.001000 s: (8.00) Remarks: : C.D.C # 3915687 Start-of-delivery mark 11° cam angle after start of delivery cyl. 1 Adjust stop lever to 0.5...1.0 mm

before stop.

Note remarks

: KHD 6,1 r 3 : 01.03.91 Test sheet Edition : 3.11.89 Replaces Test oil : ISO-4113

Combination no. : 0 400 866 137

Injection pump

Pump designation : PES6A85D410/3RS2761 : 0 410 886 895

EP type number

Governor

Governor design. : RSV325...1400A2C2205

-1L

: 0 420 232 520 Governer no.

Customer—spec. information Customer

: BF6L913 Engine

: 118.0 1st version kW : 2800 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

: 172...175 pressure, bar

Test lines : 1 680 750 014

Outside diameter x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.50...2.60

: (2.45...2.65)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

rpm: 1250 1st speed

Rack travel in mm : 12.30...12.40

Del.quantity cm3/: 8.7...8.8

100 s: (8.5...9.0)

cm3 : 0.3Spread

100 s: (0.5)

2nd speed rpm : 325.0 Rack travel in mm : 7.5...7.7 Del.quantity cm3/: 0.8...1.4

100 s: (0.6...1.6) cm3 : 0.2

Spread 100 s: (0.4)

GUIDE SLEEVE POSITION Control-Lever position

Degree: -3

rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 4.25

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1250 Aneroid pressure h: 700

: 87.5...88.5 Del.quantity 1000 : (85.5...90.5)

: 3.00 cm3 Spread

1000 : (5.00)

RATED SPEED

1st version

Control lever

position degrees: 97...105

Testing:

1st rack travel in: 11.30

Speed rpm : 1290...1300 2nd rack travel in: 4.00

rpm : 1345...1375 Speed

3rd rack travel in: 4.00

rpm : 1360...1390 Speed

4th rack travel in: 1525

rpm : 0.30...1.40 Speed

LOW IDLE 1 Control Lever

position degrees: 65...73 Setting point w/out bumper spring

Speed rpm : 325 Rack travel in mm : 7.1

Testing:

Speed rpm : 100 Minimum rack trave: 19.50

Speed rpm : 325 Rack travel in mm : 7.50...7.70

Rack travel in mm: 2.00 Speed rom : 440...500

TORQUE CONTROL

Torque control curve - 1st version

rpm : 1250 1st speed

Rack travel in m: 12.30...12.40

2nd speed rpm : 750

Rack travel in m: 12.80...12.90 3rd speed rpm : 940

Rack travel in m: 12.50...12.70

Aneroid/Altitude Compensator Test

1st version Setting

: 500 Speed rpm Pressure hPa : -

Rack travel mm : 11.50...11.60

Measurement

Speed $1/\min : 500$

1st pressure hPa : 300

Rack travel in m: 11.60...11.70 3rd pressure hPa : 700

Rack travel in m: 12.80...12.90

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700 rpm : 750

Del.quantity cm3/: 88.5...90.5

1000 s: (86.0...93.0)

Aneroid pressure h: -

rpm : 500 Speed

Del.guantity cm3/: 62.5...63.5

1000 s: (60.5...65.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.30

rpm : 1290...1300 Speed

STARTING FUEL DELIVERY

Speed : 100 rpm

Del.quantity cm3/: 110.0...120.0 1000 s: (107.0...123.0)

Rack travel in mm : 17.60...17.40

Remarks:

APPLICATION

Wheel loader

Excavator

M24

Note remarks

: CUM 8,3 a66 : 18.02.91 Test sheet Edition : 28.9.89 Replaces Test oil : ISO-4113

: 0 400 866 140 Combination no.

Injection pump

Pump designation : PES6A100D320/3RS2691

: 9 410 230 025 EP type number

Governor

Governor design. : RSV400...1100A0C2190

-33R

: 0 420 233 237 Governer no.

Customer-spec. information Customer : C.D.C.

: 6 CTA 8.3ltr Engine

: 174.5 1st version kW : 2200 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

assembly : 1 688 901 101

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,6

Test Lines : 1 680 750 014

Outside diameter x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

: 2.80...2.90 Prestroke mm

: (2.75...2.95)

Rack travel in mm: 10.50

Firing order : 1-5-3-6-2-4

: 0-60-120-180-240-300 Phasing

: 0.50 (0.75) Tolerance + - °

Time to cyl. no. : 1

BASIC SETTING

rpm: 1100 1st speed

Rack travel in mm : 12.70...12.80

Del.quantity cm3/: 12.8...13.0

100 s: (12.6...13.2)

cm3 : 0.4Spread

100 s: (0.6)

rpm : 400.0 2nd speed Rack travel in mm: 5.5...5.7

Del.quantity cm3/: 1.4...1.8

100 s: (1.2...2.0)

cm3 : 0.6Spread 100 s: (0.8)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

Speed rpm: 800 Rack travel in mm: 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1100 Speed

: 128.0...130.0 Del.quantity 1000 : (126.0...132.0)

cm3 : 4.00 Spread

1000 : (6.50)

RATED SPEED

1st version

Control lever

position degrees: 41...49

Testing:

M25

1st rack travel in: 11.70 rpm : 1140...1150 Speed 2nd rack travel in: 4.00 rpm : 1200...1230 Speed 3rd rack travel in: 4.00 Speed rpm: 1205...1235 4th rack travel in: 1300 rpm : 0.30...1.40 Speed LOW IDLE 1 Control Lever position degrees: 20...28 Setting point w/out bumper spring rpm : 400 Rack travel in mm: 5.1 Testing: Speed : 100 rpm Minimum rack trave: 19.00 : 400 rpm Rack travel in mm : 5.50...5.70 Rack travel in mm : 2.00 rpm : 445...505 Speed BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 11.70 rpm : 1140...1150 Speed STARTING FUEL DELIVERY : 100 Speed rpm Del.quantity cm3/: 145.0...165.0 1000 s: (140.0...170.0) Rack travel in mm : 19.00...21.00 LOW IDLE : 400 Speed rpm Rack travel in mm : 5.50...5.70 Del.quantity cm3/: 14.5...18.5 1000 s: (12.5...20.5) Spread cm3 : 6.00 1000 s: (8.00) Remarks: : C.D.C. # 3915967 APPLICATION Adjust stop lever to 0.5...1.0 mm before stop. Start-of-delivery mark 11° cam angle after start of delivery cyl. 1

Note remarks

: CUM 8,3 a84 : 18.02.91 Test sheet Edition : 5.10.90 Replaces : ISO-4113 Test oil

: 0 400 866 168 Combination no.

Injection pump

Pump designation : PES6A100D320/3RS2691

EP type number : 9 410 230 025

Governor

: RSV400...1100A0C2190 Governor des

-52R

: 0 420 233 278 Governer no.:

Customer-spec. information Customer : C.D.C.

: 6 CTA 8.3ltr Engine

: 174.5 : 2200 1st version kW Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 D47

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 101 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0.6

Test lines : 1 680 750 014

Outside diameter x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

për values

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

: 2.80...2.90 : (2.75...2.95) Prestroke mm

Rack travel in mm: 10.50

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 12.70...12.80

Del.guantity cm3/: 12.7...12.9

100 s: (12.5...13.1)

cm3 : 0.4Spread

100 s: (0.6)

rpm : 400.0 2nd speed Rack travel in mm : 5.8...6.0 Del.quantity cm3/ : 1.7...2.1 100 s: (1.5...2.3)

Spread cm3 : 0.6100 s: (0.8)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3 rpm : 800 Speed

Rack travel in mm: 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1100 Speed

: 127.0...129.0 Del.quantity

1000 : (125.0...131.0)

: 4.00 Spread cm3 1000 : (6.50)

RATED SPEED

1st version

Control lever

position degrees: 39...47

Testing:

1st rack travel in: 11.70 rpm : 1140...1150 Speed 2nd rack travel in: 4.00 rpm : 1210...1220 Speed 3rd rack travel in: 4.00 rpm : 1210...1240 Speed 4th rack travel in: 1300 rpm : 0.30...1.40 Speed LOW IDLE 1 Control Lever position degrees: 17...25 Setting point w/out bumper spring rpm : 400 Rack travel in mm: 5.4 Testing: Speed rpm : 100 Minimum rack trave: 19.00 rpm : 400 Speed Rack travel in mm : 5.80...6.00 BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 11.70 Speed rom : 1140...1150 STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/: 155.0...175.0 1000 s: (150.0...180.0) Rack travel in mm : 16.20...16.40 LOW IDLE rpm : 400 Speed Rack travel in mm : 5.80...6.00 Del.quantity cm3/: 17.0...21.0 1000 s: (15.0...23.0) Spread cm3 : 6.001000 s: (8.00) Remarks: : C.D.C. # 3917456 Adjust stop lever to 0.5...1.0 mm before stop. Start-of-delivery mark 11° cam angle after start of delivery cyl. 1

Note remarks

: LIE 5,6 a14 Test sheet : 27.02.91 Edition

Replaces

Test oil : ISO-4113

: 0 400 874 238M Combination no.

Injection pump

Pump designation : PES4A95D41ORS2685

EP type number : 0 410 894 996

Governor

Governor design. : RSV400...1000A1C2187

: 0 420 232 387 Governer no.

Customer-spec. information Customer : LIEBHERR

Engine : D904 TB

1st version kW : 66.0 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 40...45

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

: 172...175 pressure, bar

: 1 680 750 008 Test lines

Outside diameter x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.70...2.80 Prestroke mm

: (2.65...2.85)

Rack travel in mm : 9.00...12.00

Firing order : 1-3-4-2

Phasing : 0-90-180-270

Tolerance $+ - ^{\circ} : 0.50 (0.75)$

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8.50...9.50

& maximum rack tra: 21.00

Difference ° CS : 4.00...5.00

BASIC SETTING

rpm: 980 1st speed

Rack travel in mm : 10.40...10.50

Del.quantity cm3/: 8.9...9.1

100 s: (8.7...9.3)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 400.0 Rack travel in mm : 6.3...6.5 Del.quantity cm3/: 1.0...1.6

100 s: (0.7...1.8)

cm3 : 0.3 Spread 100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3 rpm : 800 Speed

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 2.25

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 980 Speed

: 89.0...91.0 Del.guantity

1000 : (87.0...93.0) : 3.50 Spread cm3

: (6.00) 1000

RATED SPEED

1st version Control lever

position degrees: 90...98

Testing: 1st rack travel in: 9.40 Speed rpm : 1020...1040 2nd rack travel in: 4.00 rpm : 1035...1065 Speed 3rd rack travel in: 4.00 Speed rpm : 1060...1090 4th rack travel in: 1220 rpm : 0.30...1.40 Speed LOW IDLE 1 Control lever position degrees: 63...71 Setting point w/out bumper spring rpm : 400 Speed Rack travel in mm: 5.9 Testina: rpm : 100 Speed Minimum rack trave: 19.50 rpm : 400 Rack travel in mm : 6.30...6.50 Rack travel in mm : 2.00 rom : 510...570 Speed TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 980 Rack travel in m: 10.40...10.50 2nd speed rpm : 500 Rack travel in m: 10.90...11.00 4th speed rpm : 825 Rack travel in m: 10.60...10.80 FUEL DELIVERY CHARACTERISTICS 1st version Speed : 500 rpm Del.quantity cm3/: 84.5...87.5 1000 s: (82.0...90.0) Speed rpm : 700 Del.quantity cm3/: 94.0...97.0 1000 s: (91.5...99.5) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 9.40 rpm : 1020...1040 Speed STARTING FUEL DELIVERY : 100 Speed LDW. Del.quantity cm3/: 120.0...130.0 1000 s: (117.0...133.0) Rack travel in mm: 19.50...21.00

LOW IDLE

Speed rpm: 400
Rack travel in mm: 6.30...6.50
Del.quantity cm3/: 10.0...16.0
1000 s: (7.5...18.5)
Spread cm3: 3.50
1000 s: (5.50)

Remarks:

Note remarks

: LIE 5,6 a13 Test sheet : 27.02.91 Edition : 24.7.90 Replaces : ISO-4113 Test oil

Combination no. : 0 400 874 238P

Injection pump

Pump designation : PES4A950410RS2685 EP type number : 0 410 894 996

Governor

Governor design. : RSV400...1000A1c2187

: 0 420 232 387 Governer no.

Customer-spec. information Customer : LIEBHERR

: D904 T Engine

: 94.0 1st version kW : 2000 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 40...45

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.50

Test nozzle holder

: 0 687 343 009 assembly

Opening

: 172...175 pressure, bar

Test Lines : 1 680 750 008

Outside diameter x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY Test pressure, bar: 25...27

: 2.70...2.80 Prestroke mm

: (2.65...2.85)

Rack travel in mm : 9.00...12.00 : 1-3-4-2

Firing order

: 0-90-180-270 Phasina

Tolerance $+ - ^{\circ} : 0.50 (0.75)$

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8.50...9.50

& maximum rack tra: 21.00

Difference ° CS : 4.00...5.00

BASIC SETTING

1st speed rpm: 980

Rack travel in mm : 13.00...13.10

Del.quantity cm3/: 12.4...12.6

100 s: (12.2...12.8)

cm3 : 0.3Spread

100 s: (0.6)

rpm : 400.0 2nd speed Rack travel in mm: 6.3...6.5 Del.quantity cm3/: 1.0...1.6

100 s: (0.7...1.8)

cm3 : 0.3Spread

100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position Dearee: -3

rpm : 800

Rack travel in mm: 0.30...0.70

Governor spring pre-tension Click setting x : 2.25

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 980

: 124.0...126.0 Del.quantity : (122.0...128.0) 1000

: 3.50 Spread cm3

: (6.00) 1000

RATED SPEED

1st version Control lever

position degrees: 90...98

Testina: 1st rack travel in: 12.00 Speed rpm : 1020...1040 2nd rack travel in: 4.00 rpm : 1035...1065 Speed 3rd rack travel in: 4.00 Speed rpm : 1060...1090 4th rack travel in: 1220 Speed rpm: 0.30...1.40 LOW IDLE 1 Control lever position degrees: 63...71 Setting point w/out bumper spring rpm : 400 Rack travel in mm: 5.9 Testing: Speed rpm : 100 Minimum rack trave: 19.50 Speed rpm : 400 Rack travel in mm : 6.30...6.50 Rack travel in mm : 2.00 rpm : 510...570 Speed TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 980 Rack travel in m: 13.00...13.10 2nd speed rpm : 500 Rack travel in m: 13.40...13.50 4th speed rpm : 825 Rack travel in m: 13.20...13.40 FUEL DELIVERY CHARACTERISTICS 1st version : 750 Speed rpm Del.quantity cm3/: 130.5...133.5 1000 s: (128.0...136.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 12.00 rpm : 1020...1040 Speed STARTING FUEL DELIVERY rpm : 100 Speed Del.quantity cm3/: 120.0...130.0 1000 s: (117.0...133.0) Rack travel in mm : 19.50...21.00

Remarks:

NO4

LOW IDLE

Note remarks

: RAB 9,7 a 4 Test sheet : 01.03.91 Edition Replaces : 5.2.88 Test oil : ISO-4113

Combination no. : 0 400 876 266

Injection pump

Pump designation : PES6A95D41ORS2108 : 0 410 896 983 EP type number

Governor

: RSV450...1000A1C2004 Governor design.

DL

: 0 420 233 219 Governer no.

Customer—spec. information Customer : RABA

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.00

Test nozzle holder

: 0 681 343 009 assembly

Openina

pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter x Wall thickness

x Lenath mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 1.70...1.80 Prestroke mm

: (1.65...1.85)

Rack travel in mm : 9.00...12.00

: 1-5- 3- 6- 2-Firing order

Phasing : 0-60-120-180-240-300

Tolerance $+ - \circ : 0.50 (0.75)$

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1000

Rack travel in mm : 11.10...11.20

Del.guantity cm3/: 10.7...10.9

100 s: (10.5...11.1)

cm3 : 0.3Spread

100 s: (0.6)

rpm : 450.02nd speed Rack travel in mm : 5.9...6.1 Del.quantity cm3/: 1.1...1.7

100 s: (0.8...1.9) cm3 : 0.3

Spread 100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 6.25

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1000 Speed

1000 : (105.5...109.5 cm3 : 3.00 Del.quantity

Spread

: (6.00) 1000

RATED SPEED

1st version Control lever

position degrees: 106...114

Testing:

1st rack travel in: 10.10 Speed rpm : 1040...1050

2nd rack travel in: 4.00

rpm : 1085...1115 Speed

4th rack travel in: 1250

Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever position degrees: 80...88 Setting point w/out bumper spring : 450 rom Rack travel in mm: 5.5 Testing: Speed rpm : 100 Minimum rack trave: 19.50 rpm : 450 Rack travel in mm : 5.90...6.10 Rack travel in mm : 2.00 rpm : 530...590 Speed TORQUE CONTROL Torque control curve - 1st version st speed rpm : 1000 Rack travel in m: 11.10...11.20 1st speed 2nd speed rpm : 800 Rack travel in m: 12.60...12.70 3rd speed rpm : 500 Rack travel in m: 12.60...12.80 FUEL DELIVERY CHARACTERISTICS 1st version : 800 Speed rom Del.quantity cm3/: 124.5...129.0 1000 s: (122.5...131.0) rpm : 500 Del.quantity cm3/: 125.5...129.5 1000 s: (123.5...131.5) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 10.10 rpm : 1040...1050 Speed LOW IDLE rpm : 450 Speed Rack travel in mm : 5.90...6.10 Del.quantity cm3/: 11.0...17.0 1000 s: (8.5...19.5) cm3 : 3.00 Spread 1000 s: (5.00) Remarks: APPLICATION Tractor (tractor engines)

Note remarks

Test sheet : MB 5,7 v 11
Edition : 27.02.91
Replaces : 12.9.86
Test oil : ISO-4113

Combination no. : 0 400 876 293

Injection pump

Pump designation : PES6A90D410RS2596 EP type number : 0 410 896 073

Governor

Governor design. : RSV350...1400A0C1141

L

Governer no. : 0 420 232 423

Customer-spec. information

Customer : DAIMLER-BENZ

Engine : OM352A

1st version kW : 123.0 Rated speed : 2800

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Opening.

pressure, bar : 172...175

Test Lines : 1 680 750 014

Outside diameter x Wall thickness

x Length mm : 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.00...2.10

: (1.95...2.15)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance $+ - \circ : 0.50 (0.75)$

BASIC SETTING

1st speed rpm: 1400

Rack travel in mm : 11.90...12.00

Del.quantity cm3/: 7.4...7.5

100 s: (7.2...7.7)

Spread cm3: 0.3

100 s: (0.4)

2nd speed rpm : 350.0 Rack travel in mm : 7.8...8.4 Del.quantity cm3/ : 1.0...1.2

100 s: (0.8...1.4)

Spread cm3: 0.2

100 s: (0.4)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

Speed rpm: 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 4.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1400 Aneroid pressure h: 700

Del.quantity : 74.0...75.0

1000 : (72.0...77.0) cm3 : 3.00

1000 : (4.50)

RATED SPEED

Spread

1st version Control lever

position degrees: 110...118

Testing:

1st rack travel in: 10.90

Speed rpm : 1435...1440

2nd rack travel in: 4.00 Speed rpm : 1475...1488

NO7

3rd rack travel in: 4.00 rpm : 1520...1550 Speed 4th rack travel in: 1680 Speed rpm : 0.30...1.40 LOW IDLE 1 Control lever position degrees: -3 Setting point w/out bumper spring rpm : 350 Rack travel in mm: 8.1 Testing: Speed rpm : 100 Minimum rack trave: 16.00 Speed rpm : 350 Rack travel in mm : 8.00...8.20 Rack travel in mm : 2.00 rpm : 470...530 Speed TORQUE CONTROL Torque control curve - 1st version rpm : 1400 1st speed Rack travel in m: 11.90...12.00 2nd speed rpm : 900 Rack travel in m: 13.00...13.10 3rd speed rpm : 1050 Rack travel in m: 12.70...12.90 4th speed rpm : 1260 Rack travel in m: 11.90...12.00 Aneroid/Altitude Compensator Test 1st version Settina Speed : 500 rpm hPa : 700 Pressure Rack travel mm : 13.10...13.20 Measurement Speed 1/min: 500 1st pressure hPa : -Rack travel in m: 11.30...11.40 2nd pressure hPa : 500
Rack travel in m: 12.60...12.70
3rd pressure hPa : 340
Rack travel in m: 11.60...11.80 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 700 Speed rpm : 900 Del.quantity cm3/ : 75.0...78.0 1000 s: (72.5...80.5) Aneroid pressure h: -

rpm : 500 Speed Del.quantity cm3/: 50.0...51.0 1000 s: (48.0...53.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 10.90 rpm : 1435...1440 Speed STARTING FUEL DELIVERY rpm_ : 100 Speed Del.quantity cm3/: 78.0...88.0 1000 s: (75.0...91.0) Rack travel in mm : 16.10...16.50 LOW IDLE Speed rpm : 350Rack travel in mm : 7.80...8.40 Del.quantity cm3/: 10.0...12.0 1000 s: (8.0...14.0) cm3 : 2.50Spread 1000 s: (4.50) Remarks: Hydraulic latching of starting delivery. Latching at 0.45 bar...0.55 bar. Unlatching at 0.25 bar...0.35 bar. **APPLICATION** Unimog

Note remarks

Test sheet : DEE 7,6 w 1 : 18.02.91 Edition Replaces : 17.9.90 Test oil : ISO-4113

Combination no. : 0 400 876 350

Injection pump

Pump designation : PES6A100D410RS2754 : 0 410 806 002 EP type number

Governor

: RSV425...1100A2C2234 Governor design.

: 0 420 232 498 Governer no.

Customer-spec. information

: JOHN DEERE Customer

: 6076TRW04 Engine

1st version kW : 122.0 : 2200 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 457 413 010

Inlet press., bar: 1.50

Test nozzle holder

assembly : 1 688 901 101

Openina

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

: 2.95...3.05 : (2.90...3.10) Prestroke mm

Rack travel in mm : 10.50

Firing order : 1 - 5 - 3 - 6 - 2 - 4

: 0-60-120-180-240-300 Phasing

: 0.50 (0.75) Tolerance + - °

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1100

Rack travel in mm : 10.60...10.70

Del.quantity cm3/: 10.0...10.2

100 s: (9.8...10.4)

Spread cm3 : 0.4

100 s: (0.6)

rpm : 425.0 2nd speed Rack travel in mm : 5.8...6.0 Del.quantity cm3/ : 2.6...3.0

100 s: (2.4...3.2)

cm3 : 0.6Spread

100 s: (0.8)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800 Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

: 100.5...102.5 Del.quantity 1000 : (98.5...104.5)

: 4.00 cm3 Spread

1000 : (6.50)

RATED SPEED

1st version

Control Lever

position degrees: 41...49

Testing:

1st rack travel in: 9.60 rpm : 1145...1155 Speed 2nd rack travel in: 4.00 rpm : 1200...1210 Speed

3rd rack travel in: 4.00 rpm : 1200...1230 Speed

4th rack travel in: 1300

rom : 0.30...1.40 Speed

LOW IDLE 1 Control lever

position degrees: 17...25 Setting point w/out bumper spring

rpm : 425 Rack travel in mm: 5.4

Testing:

Speed rpm : 100 Minimum rack trave: 19.00 rpm : 425 Speed

Rack travel in mm : 5.80...6.00

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1100

Rack travel in m: 10.60...10.70 2nd speed rpm : 700

Rack travel in m: 11.80...12.20

FUEL DELIVERY CHARACTERISTICS

1st version

: 700 Speed rom

Del.quantity cm3/: 125.0...128.0 1000 s: (122.5...130.5)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 9.60

rpm : 1145...1155 Speed

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 100.0...120.0

1000 s: (95.0...125.0)

LOW IDLE

Speed rpm : 425

Rack travel in mm : 5.80...6.00 Del.quantity cm3/ : 26.0...30.0 1000 s: (24.0...32.0)

cm3 : 6.00Spread 1000 s: (8.00)

Remarks:

: JOHN DEERE # RE29182

Start-of-delivery mark = 13,5° after

start of delivery cyl. 1.

Starting/full-load transition speed from holding magnet = 450 1/min.

Adjustment without torque-control spring retainer with 0,5 mm less control-rod travel. Increase in full-load delivery with torque-control spring retainer.

Note remarks

Test sheet

: DEE 7,6 w 2

Edition

: 18.02.91 : 17.9.90

Replaces Test oil

: ISO-4113

Combination no.

: 0 400 876 351

Injection pump

Pump designation : PES6A100D410RS2754

EP type number

: 0 410 806 002

Governor

Governor design.

: RSV425...1100A2@2234

-1L

Governer no.

: 0 420 232 499

Customer-spec. information

Customer

: JOHN DEERE

Engine

: 6076 TRW01

1st version kW

Rated speed

: 106.0 : 2200

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C

: 38...42

Overflow valve

: 1 417 413 010

Inlet press., bar: 1.50

Test nozzle holder

assembly

: 1 688 901 101

Opening .

pressure, bar

: 207...210

Orifice plate

diameter mm

: 0,6

Test lines

: 1 680 750 008

Outside diameter

x Wall thickness

x Length mm

: 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm

Firing order

: 2.95...3.05

: (2.90...3.10)
Rack travel in mm : 10.50

: 1-5-3-6-2-4

Phasina

: 0-60-120-180-240-300

Tolerance + - °

: 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed

rpm: 1100

Rack travel in mm : 9.70...9.80

Del.quantity cm3/: 8.9...9.1

100 s: (8.7...9.3)

Spread

cm3 : 0.4

100 s: (0.6)

rpm : 425.0 2nd speed

Rack travel in mm : 5.9...6.1 Del.quantity cm3/ : 2.6...3.0 100 s: (2.4...3.2)

Spread

cm3 : 0.6

100 s: (0.8)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

Spread

rpm : 1100

Del.quantity

: 89.0...91.0 1000 : (87.0...93.0)

: 4.00

cm3

1000 : (6.50)

RATED SPEED

1st version

Control lever

position degrees: 42...50

Testing:

1st rack travel in: 8.70

rpm : 1145...1155 Speed

2nd rack travel in: 4.00

Speed rpm : 1200...1210

3rd rack travel in: 4.00

Speed rpm : 1200...1230 4th rack travel in: 1300

Speed rpm : 0.30...1.40

LOW IDLE 1 Control lever

position degrees: 16...24

Setting point w/out bumper spring

: 425 rpm Rack travel in mm: 5.5

Testing:

rpm : 100 Speed Minimum rack trave: 19.00

rpm : 425 Speed

Rack travel in mm : 5.90...6.10

TORQUE CONTROL

Torque control curve - 1st version

rpm : 1100 1st speed

Rack travel in m: 9.70...9.80

2nd speed rpm : 700

Rack travel in m: 10.70...10.90

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 700 Del.quantity cm3/ : 110.5...113.5 1000 s: (108.0...116.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 8.70

Speed rpm : 1145...1155

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 100.0...120.0 1000 s: (95.0...125.0)

LOW IDLE

rpm : 425 Speed

Rack travel in mm: 5.90...6.10 Del.quantity cm3/: 26.0...30.0 1000 s: (24.0...32.0)

Spread

cm3 : 6.00

1000 s: (8.00)

Remarks:

: JOHN DEERE # RE29303

Adjustment without torque-control spring retainer with 0,5 mm less control-rod travel. Increase in

full-load delivery with torque-control

spring retainer.

Start-of-delivery mark = 13,5° after

start of delivery cyl. 1.

APPLICATION

Tractor (tractor engines)

Note remarks

: DEE 7,6 w 4 : 18.02.91 Test sheet Edition : 17.9.90 Replaces Test oil : ISO-4113

Combination no. : 0 400 876 354

Injection pump

Pump designation : PES6A100D410RS2754 EP type number : 0 410 806 002

Governor

: RSV425...1100A2C2235 Governor design.

: 0 420 232 511 Governer no.

Customer-spec. information

: JOHN DEERE Customer

: 6076TRW06 Engine

1st version kW : 98.0 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 457 413 010

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 101 assembly

Openina

pressure, bar : 207...210

Orifice plate

diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

: 2.95...3.05 Prestroke mm

: (2.90...3.10)

Rack travel in mm: 10.50

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1100

Rack travel in mm : 9.00...9.10

Del.guantity cm3/: 8.3...8.5

100 s: (8.1...8.7)

cm3 : 0.4Spread

100 s: (0.6)

rpm : 425.0 2nd speed Rack travel in mm: 5.7...5.9

Del.quantity cm3/: 2.6...3.0

100 s: (2.4...3.2) cm3 : 0.6

Spread 100 s: (0.8)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800 Speed Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x :?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

: 1100 Speed rpm

: 83.5...85.5 Del.quantity : (81.5...87.5) 1000

Spread cm3 : 4.00

1000 : (6.50)

RATED SPEED

1st version

Control lever

position degrees: 41...49

Testina:

1st rack travel in: 8.00 rpm : 1145...1155 Speed

2nd rack travel in: 4.00

Speed rpm : 1200...1210

3rd rack travel in: 4.00

Speed rpm: 1200...1230 4th rack travel in: 1300

rom : 0.30...1.40 Speed

LOW IDLE 1 Control lever

position degrees: 18...26

Setting point w/out bumper spring

Speed rpm : 425 Rack travel in mm : 5.3

Testing:

Speed rpm : 100 Minimum rack trave: 19.00 : 425 rpm

Rack travel in mm : 5.70...5.90

TORQUE CONTROL

Torque control curve – 1st version

1st speed rpm : 1100

Rack travel in m: 9.00...9.10

2nd speed rpm : 650 Rack travel in m: 9.50...9.70

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 650 Del.quantity cm3/ : 103.0...106.0 1000 s: (100.5...108.5)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 8.00

rpm : 1145...1155 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 100.0...120.0 1000 s: (95.0...125.0)

LOW IDLE

rpm : 425 Speed

Rack travel in mm : 5.70...5.90 Del.quantity cm3/ : 26.0...30.0

1000 s: (24.0...32.0)

Spread cm3 : 6.001000 s: (8.00)

Remarks:

: JOHN DEERE # RE36069

Start-of-delivery mark = 13,5° after

start of delivery cyl. 1.

Starting/full-load transition speed from holding magnet = 450 1/min.

Adjustment without torque-control spring retainer with 0,5 mm less control-rod travel. Increase in full-load delivery with torque-control spring retainer.

Note remarks

Test sheet : VAL 6,6 b 1 Edition : 18.02.91

Replaces

Test oil

: ISO-4113

Combination no.

: 0 400 876 386

Injection pump

Pump designation : PES6A95D32ORS2806 EP type number

: 0 410 896 898

Governor

Governor design.

: RSV500...1100A0C2178

-9R

Governer no.

: 0 420 233 282

Customer

Customer-spec. information : VALMET

Engine

: 620DS

1st version kW

: 124.0

Rated speed

: 2200

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C

: 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening |

: 172...175 pressure, bar

Test lines : 1 680 750 014

Outside diameter

x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values ___

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm

: 2.50...2.60

: (2.45...2.65)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance $+ - \circ : 0.50 (0.75)$

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...12.00

& maximum rack tra: 21.00

Difference * CS : 4.50...5.50

BASIC SETTING

1st speed rpm: 1100

Rack travel in mm : 11.00...11.10

Del.guantity cm3/: 9.5...9.7

100 s: (9.3...9.9)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 500.0 Rack travel in mm : 5.4...5.6

Del.quantity cm3/: 2.1...2.9

100 s: (1.8...3.1)

cm3 : 0.3Spread

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

rpm : 800 Speed Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 2.25

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1100 Speed

: 95.0...97.0 Del.quantity

1000 : (93.0...99.0)

: 3.50 Spread cm3

1000 : (6.00)

RATED SPEED

1st version

Control lever position degrees: 81...89 Testing: 1st rack travel in: 10.00 rpm : 1140...1150 2nd rack travel in: 4.00 rpm : 1170...1200 Speed 3rd rack travel in: 4.00 Speed rpm : 1180...1210 4th rack travel in: 1345 Speed rpm : 0.30...1.40 LOW IDLE 1 Control Lever position degrees: 63...71 Setting point w/out bumper spring rpm : 500 Rack travel in mm: 5.0 Testina: Speed rpm : 100 Minimum rack trave: 19.50 rpm : 500 Speed Rack travel in mm : 5.40...5.60 Rack travel in mm : 2.00 rpm : 540...600 Speed TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1100 Rack travel in m: 11.00...11.10 2nd speed rpm : 500 Rack travel in m: 12.00...12.10 4th speed rpm : 790 Rack travel in m: 11.50...11.70 FUEL DELIVERY CHARACTERISTICS 1st version rpm : 500 Speed Del.quantity cm3/: 91.0...94.0 1000 s: (88.5...96.5) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 10.00 rpm : 1140...1150 Speed STARTING FUEL DELIVERY rpm : 100 Speed

Del.quantity cm3/: 190.0...200.0

1000 s: (187.0...203.0)

Rack travel in mm : 19.50...21.00 LOW IDLE Speed rpm : 500 Rack travel in mm : 5.40...5.60 Del.quantity cm3/: 21.0...29.0 1000 s: (18.5...31.5) cm3 : 3.50 Spread 1000 s: (5.50) Remarks: **APPLICATION** Tractor (tractor engines)

Note remarks

Test sheet : MB 6,0 j 3 Edition : 18.02.91

Replaces

Test oil : ISO-4113

Combination no. : 0 400 876 388

Injection pump

Pump designation : PES6A95D41ORS2797 EP type number : 0 410 896 900

Governor

: RSV350...1200A1C1154 Governor design.

-2L

: 0 420 232 561 Governer no.

Customer—spec. information

Customer : MERCEDES-BENZ

: OM 366 Engine

: 81.0 1st version kW : 2400 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Openina |

: 172...175 pressure, bar

Test Lines : 1 680 750 015

Outside diameter x Wall thickness

x Length mm : 6.00x1.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.20...3.30

: (3.15...3.35)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

Phasing : 0-60-120-180-240-300

: 0.50 (0.75) Tolerance + - °

BASIC SETTING

1st speed rpm: 1200

Rack travel in mm : 9.80...9.90

Del.quantity cm3/: 5.4...5.6

100 s: (5.2...5.8)

cm3 : 0.3Spread

100 s: (0.6)

rpm : 350.02nd speed Rack travel in mm: 9.4...10.0 Del.quantity cm3/: 0.8...1.4 100 s: (0.5...1.6)

cm3 : 0.3 Spread 100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800 Speed

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 4.75

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

: 1200 Speed mgn

: 54.5...56.5 Del.quantity 1000 : (52.5...58.5)

: 3.50 Spread cm3

: (6.00) 1000

RATED SPEED

1st version

Control Lever

position degrees: 110...118

Testing:

1st rack travel in: 8.80

rpm : 1240...1245 Speed

2nd rack travel in: 4.00

rpm : 1263...1280 Speed

3rd rack travel in: 4.00

rpm : 1300...1330 Speed 4th rack travel in: 1400 Speed rpm : 0.30...1.405th rack travel in: 1245...1255 rpm : 8.80 Speed LOW IDLE 1 Control Lever position degrees: -3 Setting point w/out bumper spring Speed rpm : 350 Rack travel in mm: 9.7 Testing: rpm : 100 Speed Minimum rack trave: 19.50 rpm : 350 Rack travel in mm : 9.40...10.00 Rack travel in mm : 2.00 Speed rpm : 495...555 TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1200 Rack travel in m: 9.80...9.90 nd speed rpm : 500 Rack travel in m: 11.10...11.30 2nd speed 3rd speed rpm : 850 Rack travel in m: 10.40...10.60 FUEL DELIVERY CHARACTERISTICS 1st version Speed rpm : 500 Del.quantity cm3/: 48.0...51.0 1000 s: (45.5...53.5) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 8.80 Speed rpm : 1240...1245 STARTING FUEL DELIVERY rpm : 100 Speed Del.quantity cm3/: 92.0...102.0 1000 s: (89.0...105.0) Rack travel in mm : 16.10...16.50 Remarks:

Unimog

APPLICATION

Note remarks

Test sheet : MB 6,0 j 2 Edition : 27.02.91 Replaces : 1.2.91 Test oil : ISO-4113

Combination no. : 0 400 876 389

Injection pump

Pump designation : PES6A95D410RS2797 EP type number : 0 410 896 900

Governor

Governor design. : RSV350...1200A1C1163

-2L

Governer no. : 0 420 232 562

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : OM 366

1st version kW : 75.0 Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Openina

pressure, bar : 172...175

Test Lines : 1 680 750 015

Outside diameter x Wall thickness

x Length mm : 6.00X1.50X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.20...3.30

: (3.15...3.35)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance $+ - \circ : 0.50 (0.75)$

BASIC SETTING

1st speed rpm: 1200

Rack travel in mm : 9.00...9.10

Del.quantity cm3/: 4.8...5.0

100 s: (4.6...5.2)

Spread cm3: 0.3

100 s: (0.6)

2nd speed rpm : 350.0 Rack travel in mm : 9.4...10.0 Del.quantity cm3/ : 0.8...1.4

100 s: (0.5...1.6)

Spread cm3 : 0.3 100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position
Degree: -3

Speèd rpm: 800

Rack travel in mm: 0.30...0.70

Governor spring pre-tension Click setting x : 5.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm: 1200

Del.quantity : 48.5...50.5 1000 : (46.5...52.5)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 108...116

Testing:

1st rack travel in: 8.00

Speed rpm : 1240...1245

2nd rack travel in: 4.00

Speed rpm : 1263...1280

3rd rack travel in: 4.00

rpm : 1315...1345 Speed 4th rack travel in: 1450 Speed rpm : 0.30...1.40 5th rack travel in: 1270...1280 rpm : 8.00 Speed LOW IDLE 1 Control lever position degrees: -3 Setting point w/out bumper spring Speed MCIT : 350 Rack travel in mm: 9.7 Testina: rpm : 100 Speed Minimum rack trave: 19.50 rpm : 350 Speed Rack travel in mm : 9.40...10.00 Rack travel in mm: 2.00 rpm : 540...600 Speed TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1200 Rack travel in m: 9.00...9.10 2nd speed rpm : 500 Rack travel in m: 10.00...10.20 3rd speed rpm : 875 Rack travel in m: 9.50...9.70 FUEL DELIVERY CHARACTERISTICS 1st version Speed rpm : 500 Del.quantity cm3/: 35.0.,.38.0 1000 s: (32.5...40.5) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 8.00 rpm : 1240...1245 Speed STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/ : 78.0...88.0 1000 s: (75.0...91.0) Rack travel in mm : 15.40...15.80 Remarks: Adjust shutoff device to 0.5...1.5 mm.

APPLICATION

Unimog

Note remarks

Test sheet : DAF 6,2 o 9 Edition : 27.02.91

Replaces

: ISO-4113 Test oil

: 0 400 876 390 Combination no.

Injection pump

Pump designation : PES6A95D32ORS2693 : 0 410 896 914 EP type number

Governor

: RSV250...750A7C2206-Governor design.

3R

: 0 420 233 283 Governer no.

Customer—spec. information Customer : DAF

: DNDT 620 Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter x Wall thickness

x Length mm : 6.00X1.50X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.00...2.10 : (1.95...2.15) Prestroke mm

Rack travel in mm : 9.00...12.00

: 1-5-3-6-Firing order

: 0-60-120-180-240-300 Phasing

Tolerance $+ - ^{\circ} : 0.50 (0.75)$

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8.50...9.50

& maximum rack tra: 21.00 Difference ° CS : 2.50...3.50

BASIC SETTING

rpm: 700 1st speed

Rack travel in mm : 12.70...12.80

Del.guantity cm3/: 8.7...8.8

100 s: (8.5...9.0)

cm3 : 0.3Spread

100 s: (0.6)

2nd speed rpm : 300.0 Rack travel in mm : 6.4...6.6 Del.quantity cm3/: 0.7...1.1

100 s: (0.4...1.3)

cm3 : 0.3Spread 100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 4.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

: 87.5...88.5 Del.quantity

1000 : (85.5...90.5)

: 3.50 Spread cm3

1000 : (6.00)

RATED SPEED

1st version

Control Lever

position degrees: 91...99

Testing:

1st rack travel in: 11.70 rpm : 745...750 Speed 2nd rack travel in: 4.00 Speed rpm : 775...790 4th rack travel in: 935

rpm : 0.30...1.40 Speed

LOW IDLE 1 Control Lever

position degrees: 69...87

Setting point w/out bumper spring

: 300 rpm Rack travel in mm: 6.5 : 300 Speed rpm

Rack travel in mm : 6.40...6.60 Rack travel in mm : 2.00

: 300...360 Speed MON

SET IDLE AUXILIARY SPRING Rack travel in mm : 2.00

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 11.70 rpm : 745...750 Speed

STARTING FUEL DELIVERY

Speed : 100 mcית

Rack travel in mm : 19.50...21.00

LOW IDLE

Speed rpm : 300

Rack travel in mm : 6.40...6.60 Del.quantity cm3/: 7.0...11.0 1000 s: (4.5...13.5)

Spread cm3 : 3.50

1000 s: (5.50)

Remarks:

APPLICATION

Generator

Note remarks

Test sheet : BAO 14,9 b Edition : 18.02.91 Replaces : 5.3.90 Test oil : ISO-4113

Combination no. : 0 401 840 768

Injection pump

Pump designation : PE12P110A520RS3241 EP type number : 0 411 810 713

Governor

: RQV325...1500PA931 Governor design.

: 0 421 813 805 Governer no.

Customer-spec. information Customer : BAUDOUIN

: 12 F 11 SRE, GE Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

: 172...175 pressure, bar

Test lines : 1 680 750 015

Outside diameter x Wall thickness

: 6.00X1.50X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.60...3.70 : (3.55...3.75)

Rack travel in mm : 9.00...12.00

: 1- 12- 9- 5- 3- 8-Firing order

11- 4- 2- 10- 7- 6

Phasing : 0-45-60-105-120-165-180-225-240-285-300-

345

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1500

Rack travel in mm : 11.00...11.10

Del.quantity cm3/: 12.4...12.7

100 s: (12.1...12.9)

cm3 : 0.4Spread

100 s: (0.7)

rpm : 325.02nd speed Rack travel in mm: 6.9...7.1 Del.quantity cm3/: 1.3...1.8

100 s: (1.0...2.0) cm3 : 0.4 Spread

100 s: (0.7)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

rpm : 325 1st speed : 1.00...1.40 travel mm

: 1000 2nd speed rpm

travel mm

: 3.20...3.60 rpm : 1500 3rd speed

: 8.10...8.30 travel mm

rpm : 1800 4th speed

: 11.00...12.00 travel mm

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

rpm : 1700 Speed

Rack travel in mm : 5.00...8.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rom : 1500 Speed Aneroid pressure h: 900

: 124.0...127.0 Del.quantity

1000 : (121.5...129.5)

cm3 : 4.00 Spread

1000 : (7.50)

RATED SPEED

1st version Control lever position degrees: 116...124

Testina:

1st rack travel in: 10.00 Speed rpm : 1540...1550

2nd rack travel in: 4.00

rpm : 1630...1660 Speed 4th rack travel in: 1750

Speed rom : 0.00...1.00

LOW IDLE 1 Control Lever

position degrees: 83...91

Testing:

Speed : 100 rom Minimum rack trave: 8.50 Speed rpm : 325

Rack travel in mm : 6.90...7.10

CONSTANT REGULATION

rpm : 300...400 Speed

Aneroid/Altitude Compensator Test

1st version

Settina

Speed rpm : 500 Pressure hPa : 900

Rack travel mm : 11.00...11.10

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 9.30...9.60

2nd pressure hPa : 400

Rack travel in m: 10.50...10.60

START CUT-OUT

1/min: 275 (295) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

Speed rpm: 500 Del.quantity cm3/: 73.0...77.0

1000 s: (70.5...79.5)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 10.00

rpm : 1540...1550 Speed

LOW IDLE

: 325 Speed rpm

Rack travel in mm : 6.90...7.10 Del.quantity cm3/: 13.0...18.0

1000 s: (10.5...20.5)

Spread cm3 : 4.50 1000 s: (7.50)

Remarks:

APPLICATION

Navy

Note remarks

: ENA 10,1 e2 Test sheet Edition : 19.02.91

: 16.01.91 Replaces : ISO-4113 Test oil

Combination no. : 0 401 846 552

Injection pump

Pump designation : PE6P100A820LS503 : 0 411 806 197

EP type number Governor

Governor design. : RQ250/1000PA352-1

: 0 421 801 412 Governer no.

Customer-spec. information

Customer : ENASA

Engine : 95 T1 AZ

1st version kW : 155.0 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Openina

: 172...175 pressure, bar

Test lines : 1 680 750 015

Outside diameter x Wall thickness

x Length mm : 6.00x1.50x600

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values ___

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90

: (2.85...2.95) Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance $+ - \circ : 0.50 (0.75)$

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 980

Rack travel in mm : 13.70...13.80

Del.quantity cm3/: 15.5...15.7

100 s: (15.3...15.9)

Spread cm3 : 0.4

100 s: (0.7)

2nd speed rpm : 250.0 Rack travel in mm : 7.8...8.0

Del.quantity cm3/: 1.8...2.2

100 s: (1.5...2.4)

Spread cm3 : 0.4

100 s: (0.6)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

rpm : 600 Speed

Rack travel in mm : 16.00...17.20

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 980 Speed Aneroid pressure h: 900

: 155.0...157.0 1000 : (153.0...159.0) Del.quantity

: 4.50 Spread cm3

1000 : (7.00)

RATED SPEED

1st version

Setting point:

: 600 Speed rpm

Rack travel in mm : 16.6

Testing:

1st rack travel in: 12.70

Speed rpm : 1045...1060 2nd rack travel in: 4.00

rpm : 1100...1130 Speed

4th rack travel in: 1200

ripm : 0.00...1.50 Speed

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm: 250 Rack travel in mm: 6.0

Testing:

Speed rpm : 100 Minimum rack trave: 7.50 rpm : 250

Rack travel in mm : 5.90...6.10 Rack travel in mm : 2.00

rom : 350...390Speed

TORQUE CONTROL

: 0.40 Dimension a mm

Torque control curve - 1st version

1st speed rpm : 980

Rack travel in m: 13.70...13.80

ppm : 700 2nd speed

Rack travel in m: 14.40...14.80

3rd speed rpm : 825

Rack travel in m: 13.90...14.30

Aneroid/Altitude Compensator Test

1st version

Setting

: 500 Speed LDW. hPa : 900 Pressure

: 14.10...14.30 Rack travel mm

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 12.90...13.30

2nd pressure hPa : 400

Rack travel in m: 14.10...14.20 3rd pressure hPa : 300

Rack travel in m: 13.40...13.60

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900 rpm : 700 Speed

Del.quantity cm3/: 159.0...163.0 1000 s: (157.0...165.0)

Aneroid pressure h: -

rpm : 500 Speed

Del.quantity cm3/: 130.0...132.0 1000 s: (127.0...135.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.70

rpm : 1045...1060 Speed

STARTING FUEL DELIVERY

Speed rom

Del.quantity cm3/: 150.0...170.0 1000 s: (146.0...174.0)

LOW IDLE

Speed rpm : 250

Rack travel in mm : 5.90...6.10

Remarks:

Check electrically unlatched starting

fuel delivery (EES) with 24 volt.

On activation of the starting solenoid, the start position must be reached.

Note remarks

: DAF 11,7 o : 18.02.91 Test sheet Edition

Replaces

Test oil : ISO-4113

: 0 401 846 568 Combination no.

Injection pump

Pump designation : PE6P110A320RS529 : D 411 816 179 EP type number

Governor

Governor design. : RQ275/1000PA818-3

: 0 421 801 534 Governer no.

Customer—spec. information Customer : DAF

Engine : LT 195 G

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Opening

pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.80...2.90 : (2.75...2.95) Prestroke mm

Rack travel in mm : 14.50...15.50 Firing order : 1-5-3-6-

Phasing : 0-60-120-180-240-300

Tolerance $+ - \circ : 0.50 (0.75)$

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 4.50...4.70 & maximum rack tra: 13.6...14.6 Difference °CS : 2.00...4.00

BASIC SETTING

1st speed rpm: 600

Rack travel in mm : 14.60...14.70

Del.quantity cm3/: 19.3...19.5

100 s: (19.0...19.7)

cm3 : 0.4Spread

100 s: (0.7)

2nd speed rpm : 300.0Rack travel in mm: 6.6...6.8 Del.quantity cm3/: 2.2...2.7

100 s: (1.9...2.9)

Spread cm3 : 0.4100 s: (0.7)

GUIDE SLEEVE POSITION

Control-lever position Degree: -1

Speed rpm : 600 Rack travel in mm : 15.20...16.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600 Aneroid pressure h: 1000

: 193.0...195.0 Del.quantity

1000 : (190.5...197.5) : 4.00 cm3

Spread 1000 : (7.50)

RATED SPEED

1st version

Setting point:

Speed : 600 rpm Rack travel in mm : 15.8

Testina:

1st rack travel in: 13.10

rpm : 1030...1045

2nd rack travel in: 4.00

rom : 1100...1130 Speed

4th rack travel in: 1250

Speed rom : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring

rom : 300 Rack travel in mm: 6.8

Testina:

: 100 Speed rom Minimum rack trave: 8.10 : 300 rom

Rack travel in mm: 6.60...7.00

Rack travel in mm : 2.00 Speed rpm : 360...400

TORQUE CONTROL

Dimension a mm : 0.45

Torque contról curve - 1st version

rom : 980 1st speed

Rack travel in m: 14.00...14.20

: 600 2nd speed rom

Rack travel in m: 14.60...14.80

3rd speed : 750 rpm

Rack travel in m: 14.50...14.70

Aneroid/Altitude Compensator Test

1st version Setting

: 600 Speed rom hPa : 1000 Pressure

Rack travel mm : 14.60...14.70

Measurement

Speed 1/min: 600

1st pressure hPa : 440

Rack travel in m: 14.00...14.10 2nd pressure hPa : 340

Rack travel in m: 12.70...12.90

3rd pressure hPa

Rack travel in m: 12.10...12.30

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000 rpm : 980 Speed

Del.quantity cm3/: 179.0...181.0 1000 s: (175.0...185.0)

Aneroid pressure h: -

Speed rpm : 600 Del.quantity cm3/: 132.0...134.0 1000 s: (129.5...136.5)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 13.10

rpm : 1030...1045 Speed

STARTING FUEL DELIVERY

Speed rpm

Del.quantity cm3/: 240.0...280.0 1000 s: (236.0...284.0) Rack travel in mm: 19.50...21.00

LOW IDLE

rpm : 300 Speed

Rack travel in mm : 6.60...6.80 Del.quantity cm3/: 22.0...27.0

1000 s: (19.5...29.5)

Spread cm3 : 4.50

1000 s: (7.50)

Remarks:

Check electrically unlatched starting fuel delivery (EES) with 24 volt.

On activation of the starting solenoid, the start position must be reached.